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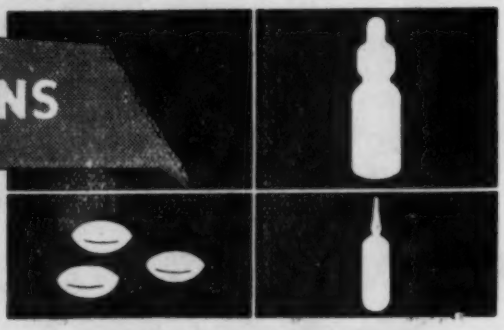

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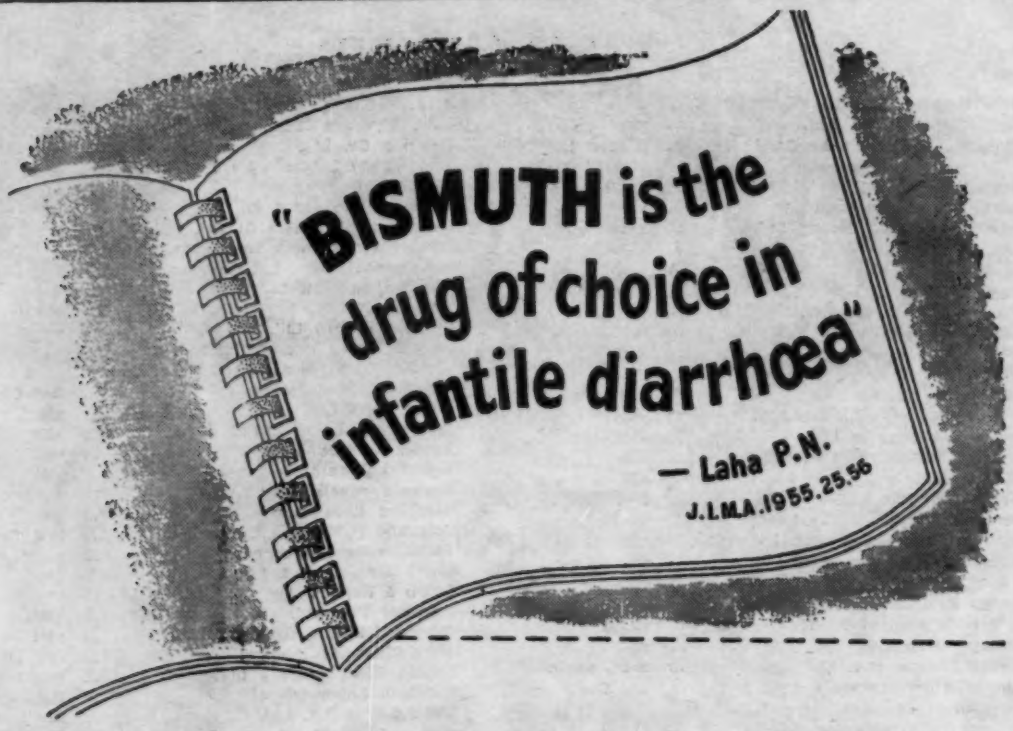

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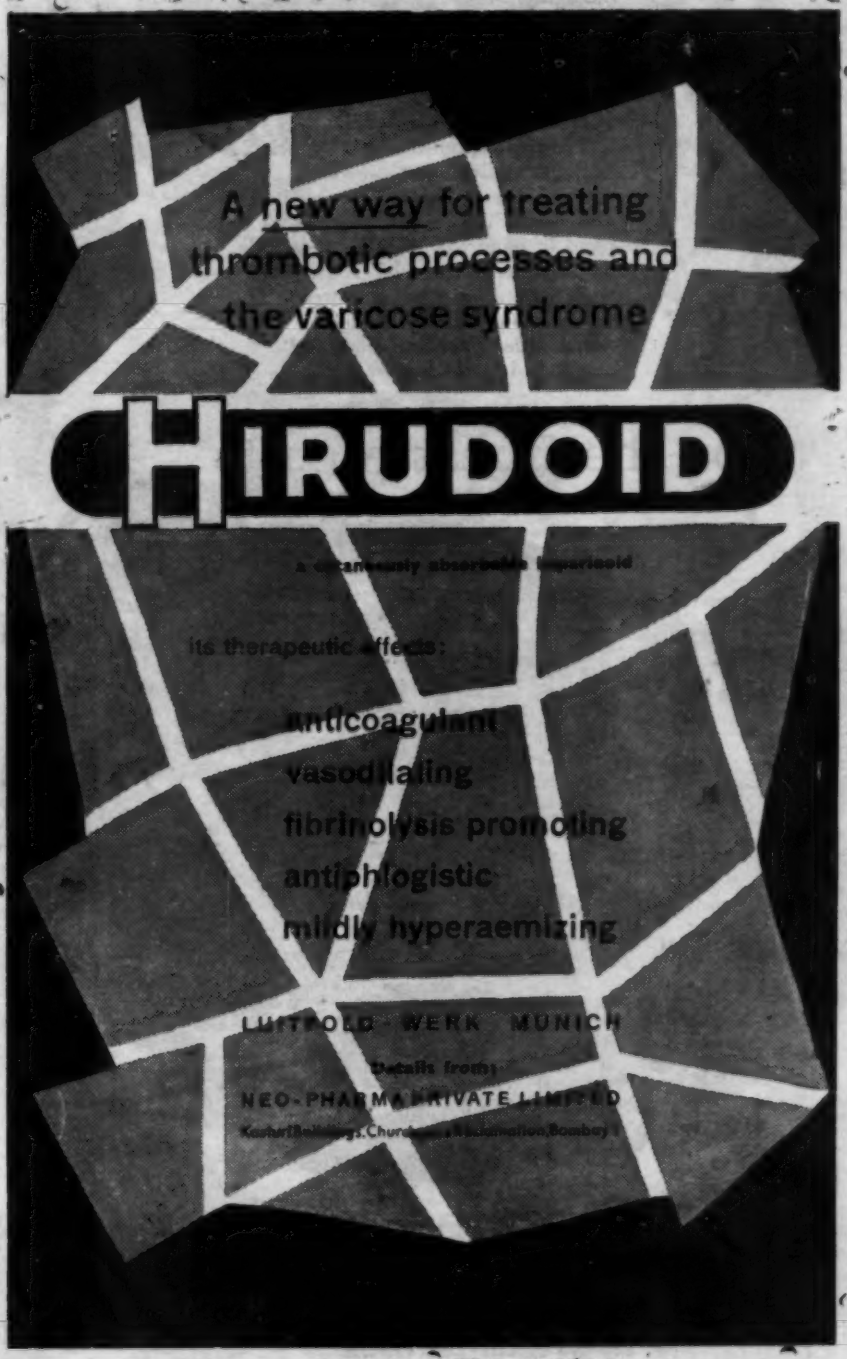
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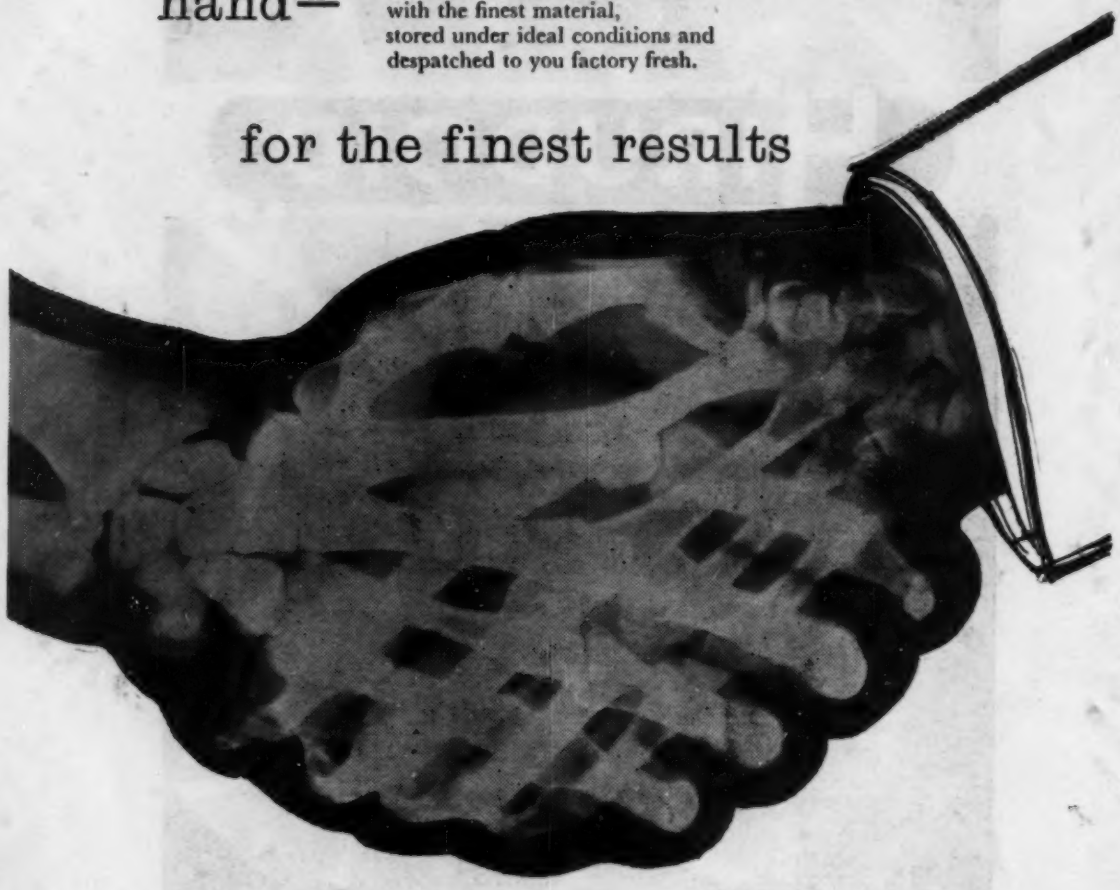

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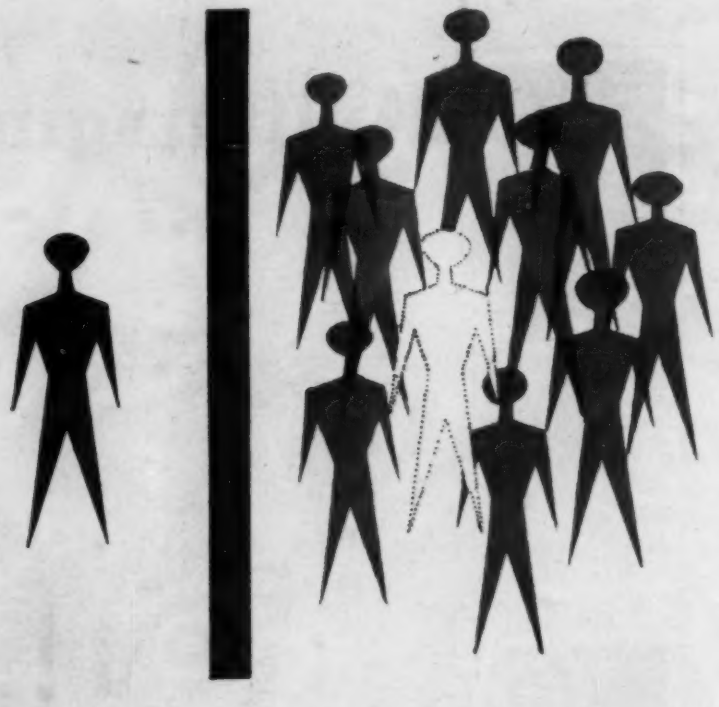

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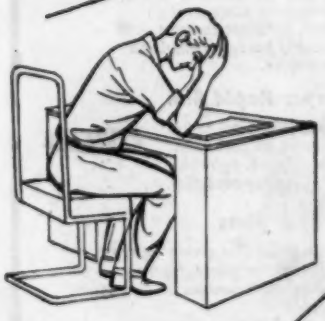

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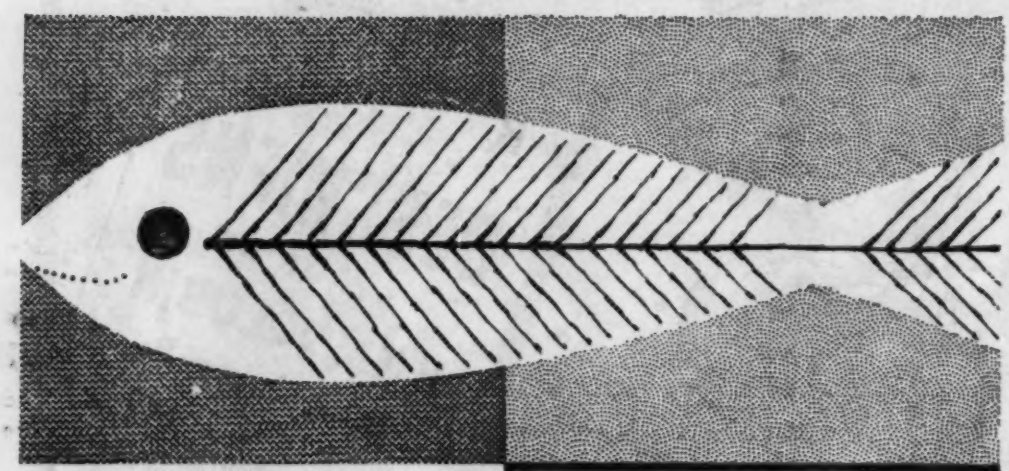

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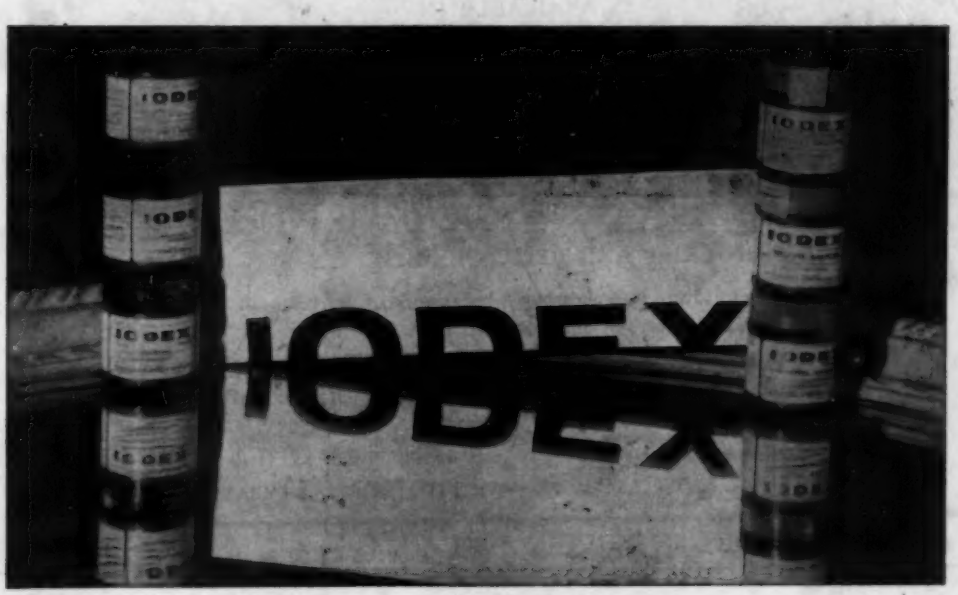

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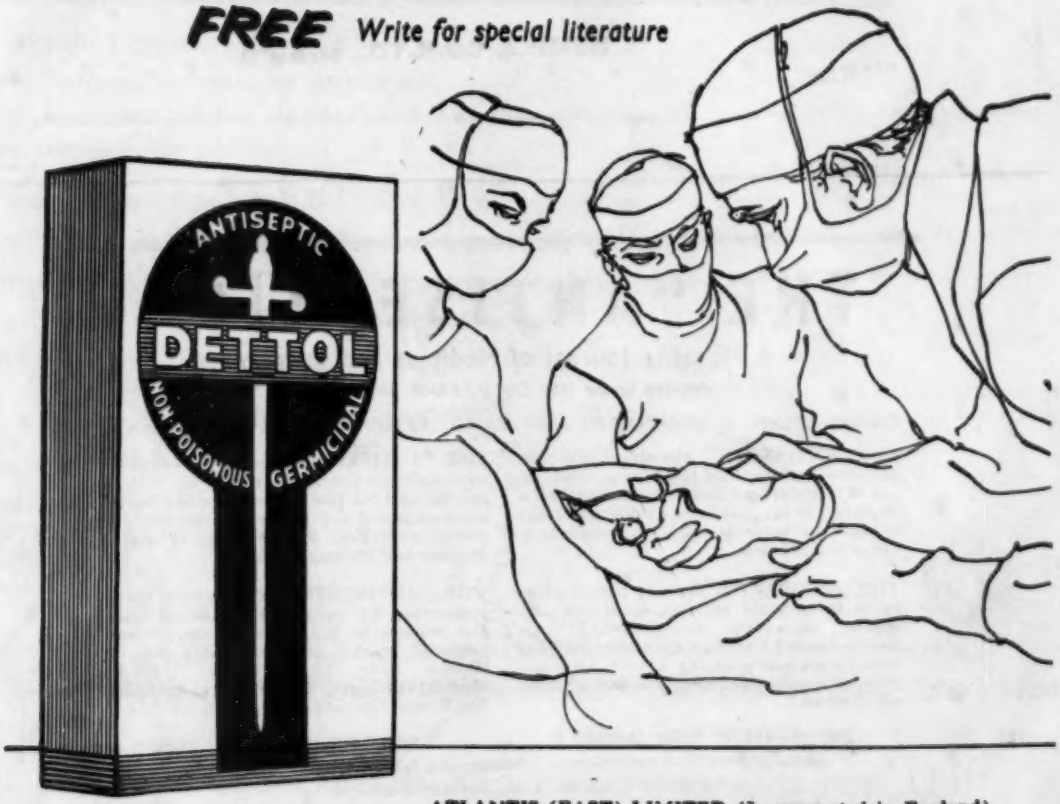

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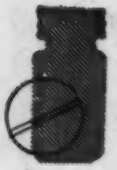

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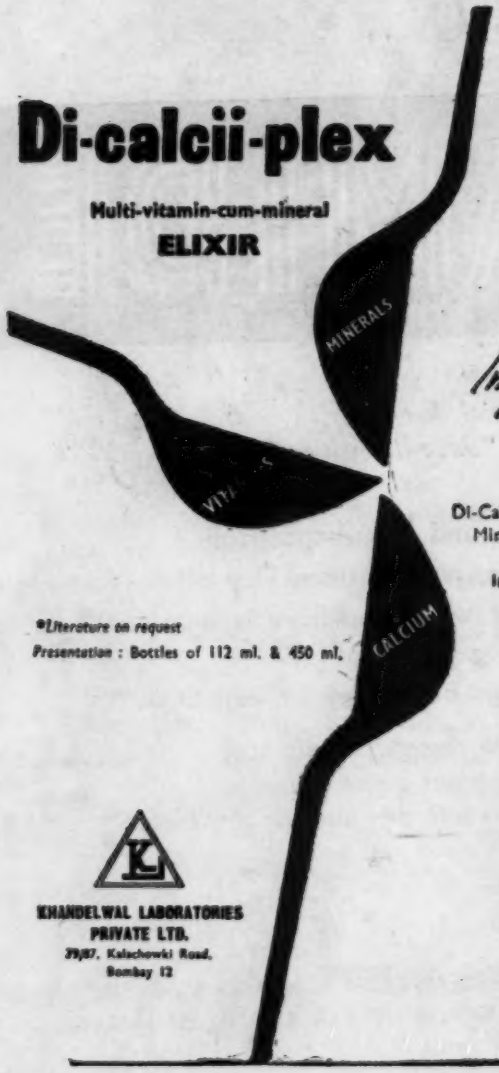

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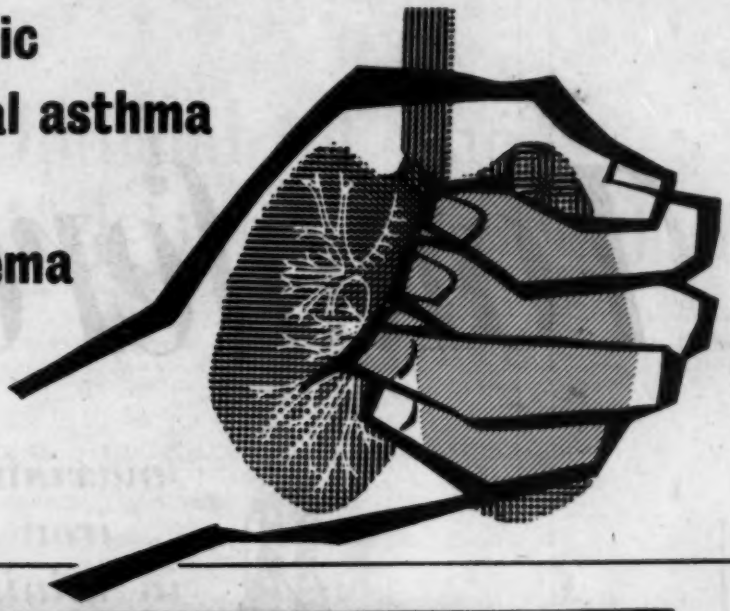

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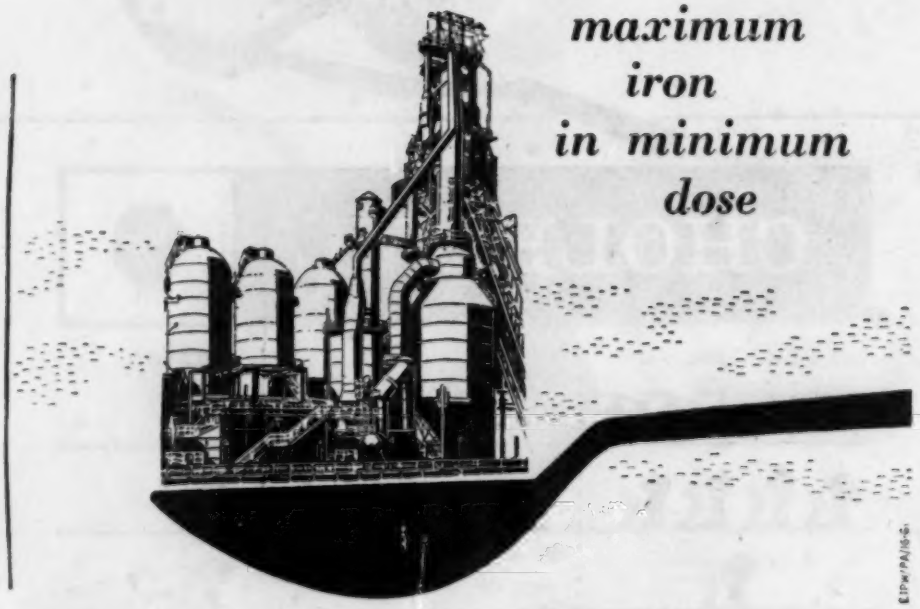

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ORIGINAL ARTICLES

CLINICAL STUDIES ON HYDROCHLOROTHIAZIDE

HARDEO NARAIN SINGH, M.D., M.R.C.P., D.T.M. & H. (LOND.)

Physician, Patna Medical College Hospital, Patna

Parenteral mercurial diuretics produce satisfactory diuresis in oedematous patients. Constant efforts have been made to replace this by equally potent oral diuretics which would not produce gastro-intestinal intolerance when administered in effective doses. Acetazolamide (diamox), a carbonic-anhydrase inhibitor, produces diuresis by increasing the urinary loss of bicarbonate which is accompanied by increased excretion of sodium, potassium and water. Hanley (1956) and Platts (1956) found it less effective than mersalyl, and Relman *et al* (1954) found it of little or no clinical value in congestive heart failure. Aminometradine (mictine) has half the diuretic effect of mersalyl in optimum doses and produces epigastric discomfort, nausea, vomiting or diarrhoea, headache and albuminuria (Platts and Hanley 1956). Amisometradine (rolicton) causes less vomiting and is relatively free from other toxic effects. Chlorothiazide is 6-chloro-7sulfamyl-1, 2, 4-benzothiadiazine-1, 1-dioxide. The free SO_2NH_2 group in its molecule suggests that it would be a carbonic-anhydrase inhibitor. Its diuretic action is largely due to the enhanced excretion of chloride ions with an almost equimolar loss of sodium (Slater and Nabarro, 1958) and in this respect it resembles the action of mercurial diuretics. Carbonic anhydrase inhibitory action of chlorothiazide might be responsible for considerable hypokalaemia during the administration of the drug (Slater and Nabarro, 1958). Hydrochlorothiazide is 6-chloro-7-sulfamyl-3, 4-dihydro-1, 2, 4-benzothiadiazine-1, 1-dioxide. It is the dihydro derivative of chlorothiazide having no double bond in the heterocyclic ring. It has been shown to be a more potent diuretic than chlorothiazide on a weight-for-weight basis (Moyer *et al*, 1959).

METHODS AND MATERIALS

The response to hydrochlorothiazide therapy was studied in thirty-one patients, of whom 4 had anaemia with hypoproteinaemia (group A), 14 cirrhosis of the liver (group B), 9 congestive heart failure (group C) and 4 nephritis (group D). Of the congestive heart failure cases, 5 had mitral heart disease, 2 pulmonary heart disease, 1 hypertensive heart disease and 1 coronary heart disease.

All the cases were admitted as indoor patients, and had oedema all over the body. None of them had previously received any diuretic therapy. A careful clinical examination was made in every case. In cardiac patients, digitalis was withheld during the hydrochlorothiazide therapy. As far as possible, a steady state was maintained and the patients were kept on 24 hours' rest in bed, before hydrochlorothiazide therapy was started. The daily intake of sodium chloride was restricted to 2 g. No other diuretic was given during the observation period. The daily intake of fluid was restricted approximately to 783 ml. The patients were weighed daily, and the urine passed in 24 hours was collected. Serum electrolytes (sodium, potassium, and chloride) and blood urea were estimated before, and 10 days after hydrochlorothiazide therapy.

Sodium and potassium were measured by flame-photometry and chloride by titration method. Routine examination of the urine and stool, haemoglobin estimation, radiography of the chest

and the heart were made, and venous pressure reading and electrocardiographic readings taken prior to and following hydrochlorothiazide therapy.

The total daily dose of hydrochlorothiazide tablets (25 mg. each) was 75 mg., 50 mg. being given at 7 A.M. and 25 mg. at 1 P.M.

Results

The response to hydrochlorothiazide (assessed according to the reduction in oedema, fall in body weight and development of biochemical abnormalities) was recorded as follows:

Very good—When there was marked diuresis and disappearance of oedema.
Good —When there was marked diuresis but moderate disappearance of oedema.
Fair —When the diuresis and disappearance of oedema were moderate.
Poor —When there was slight diuresis and disappearance of oedema.

Group A consisted of four patients of anaemia with hypoproteinaemia. The response to clinical disappearance of oedema was very good in 2, good in 1, and fair in 1 patient. The mean daily weight loss during hydrochlorothiazide therapy was 494·4 g. The average daily fluid intake was 807 ml. and urinary output 1938 ml. The minimum and maximum urinary outputs recorded were 240 ml. and 6300 ml. respectively. The average falls in the levels of the plasma sodium, chloride and potassium were 19, 19·8 and 0·65 mEq. per litre. The urinary excretions of these electrolytes were increased. The average increases in the urinary sodium, chloride and potassium were 70·8, 58·4 and 68 mEq. per twenty-four hours. The potassium excretion was marked here. Blood urea estimations in 3 cases showed an average fall of 8·4 mg. per 100 ml. during the therapy. Case 2 showed 22·4 mg. rise in the blood urea level. Of the 4 patients in this group one had bilateral hydrothorax and 2 congestion of the lungs which cleared up during hydrochlorothiazide therapy.

Group B included fourteen patients with cirrhosis of the liver. The clinical disappearance of oedema was very good in 6, good in 4, fair in 3 and poor in 1. The average daily fluid intake and urinary output were 849 ml. and 1815 ml. respectively. The mean daily loss in weight was 716·6 g. The average falls in the level of the plasma sodium, chloride and potassium were 16·9, 14·1 and 1·3 mEq. per litre. The average increases in the urinary sodium, chloride and potassium were 60·9, 40·9 and 25·5 mEq. per twenty-four hours. Blood urea estimation in 11 cases showed an average fall of 7·6 mg. per 100 ml. during the therapy, whereas 3 cases showed an average rise of 9·2 mg. per 100 ml. of blood. Radiographically, Case 22 had bilateral pleural effusion (Figs. 1 and 2, *vide* Plate), another had consolidation at the right base while a third had congestion of the lungs, which disappeared after 10 days of hydrochlorothiazide medication.

Of 14 cases of cirrhosis of the liver with ascites who received hydrochlorothiazide treatment only one (Case 21) developed into precoma stage by the 10th day. This was characterised by drowsiness, incontinence of urine and flapping tremor of the hands, with fall in the plasma levels of sodium, chloride and potassium of 10·9, 5·7, and 1·1 mEq. per litre respectively. The drug was stopped, and 5 per cent glucose with vitamin B complex was administered in adequate amount to supply the caloric requirement. Tetracyclin, 250 mg. four times a day, and potassium chloride, 4 g. daily, were given by intragastric drips. Magnesium sulphate orally and colon wash by enemas were given to remove nitrogenous materials from the bowel. The intake of protein was withheld during the precoma stage. This patient came round in about 5 days.

Group C comprised of nine cases of congestive heart failure. The clinical response to disappearance of oedema in 4 cases of mitral disease was very good in 1, fair in 2 and poor in 1; very good in 2 cases of cor pulmonale; very good in 1 case of hypertensive heart disease, and fair in 2 cases of coronary heart disease. The diuretic response was marked in cor culmonale and in hypertensive heart disease, moderate in mitral disease and fair in coronary heart disease. The mean daily weight loss during the therapy was 616·9 g. The average daily fluid intake and urinary output were 849 ml. and 1536 ml. respectively. The average falls in the levels of the plasma sodium, chloride and potassium were 20·9, 17·5 and 1·03 mEq. per litre. The average increases in the urinary sodium, chloride and potassium were 25·5, 28·6 and 22·9 mEq. per twenty-four hours. Blood urea estimations showed an average fall of 9·9 mg. per 100 ml. in 7 cases and average rise of 20·8 mg. per 100 ml. in 2 cases. Radiographic changes were noticeable in this group of patients. Six patients showed pleural effusion and seven congestion of the lungs which cleared up during hydrochlorothiazide therapy. One had consolidation of the right lung which did not respond to diuretic therapy. Massive pleural effusion in Case 4 disappeared after hydrochlorothiazide therapy (Figs. 3 and 4, *vide* Plate).

Group D consisted of four cases of nephritis. Clinical disappearance of oedema was very good in 1, good in 1, fair in 1 and poor in 1 case. The average fluid intake and urinary output were 957 ml. and 1479 ml. respectively. The minimum and maximum urinary outputs were 240 ml. and 5040 ml. respectively. The mean daily loss of weight during hydrochlorothiazide therapy was 589·7 g. The average falls in the levels of the plasma sodium, chloride and potassium were 42·8, 16·9, and 1·45 mEq. per litre. The average increases in urinary sodium, chloride, and potassium were 17·4, 35·6 and 27·4 mEq. per twenty-four hours. The blood urea estimations in the 4 cases showed an average fall of 4 mg. per 100 ml. of blood. Radiological studies revealed pulmonary congestion in two cases and bilateral pleural effusion in the other two, which cleared up after hydrochlorothiazide therapy.

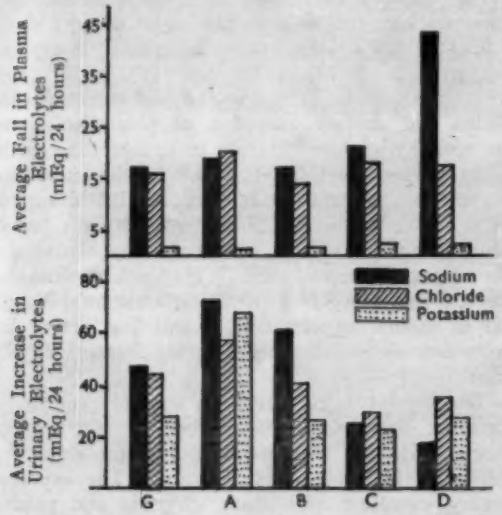

FIG. 5—SHOWING THE AVERAGE FALL IN THE PLASMA AND INCREASE IN THE URINARY ELECTROLYTES DURING 10 DAYS OF HYDROCHLOROTHIAZIDE THERAPY IN DIFFERENT TYPES OF CASES

G=General. A=Anaemia with hypoproteinaemia. B=Cirrhosis of liver. C=Congestive heart failure. D=Nephritis

Fig. 5 shows the electrolyte changes during 10 days of hydrochlorothiazide treatment in different types of cases. Fig. 6 shows the average mean daily weight loss and fluid balance during 10 days of hydrochlorothiazide treatment in different types of cases.

The maximum diuretic response of 1938 ml. a day was observed in patients with oedema from anaemia and hypoproteinaemia, but the mean daily loss of weight was only 494·4 g. Cases with cirrhosis of the liver showed good diuretic response of 1815 ml. a day with mean daily loss in weight of 716·6 g. The results in cardiac oedema with average daily diuresis of 1536 ml. and daily mean loss of weight 616·8 g. and in nephritic oedema, with a diuretic response of 1479 ml. and mean daily weight loss of 589·6 g. are quite significant.

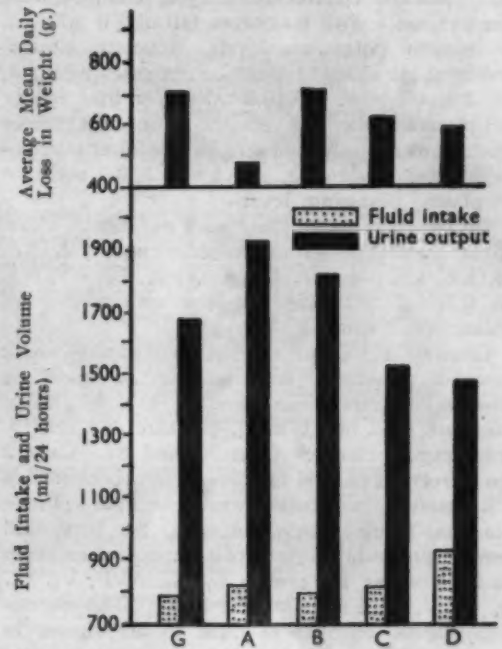

FIG. 6—SHOWING THE AVERAGE MEAN DAILY WEIGHT LOSS, FLUID INTAKE AND URINARY VOLUME IN DIFFERENT TYPES OF CASES DURING 10 DAYS OF HYDROCHLOROTHIAZIDE THERAPY

G=General. A=Anaemia with hypoproteinaemia. B=Cirrhosis of liver. C=Congestive heart failure. D=Nephritis

Venous pressure readings during hydrochlorothiazide treatment for 10 days showed an average of 42·8 mm. of water with maximum and minimum falls of 90 mm. and 16 mm. respectively. Blood pressure readings during this therapy recorded an average fall of 7 mm. Hg systolic, and 6 mm. Hg diastolic at the end of 10 days treatment. No toxic effect on the kidney was observed. The albumin which was present in untreated cases diminished as the oedema subsided. One case of cirrhosis of the liver and one case of congestive heart failure had albumin in urine which diminished at the end of the treatment. Four cases of nephritis having copious albuminuria showed appreciable decrease in the urinary albumin content during therapy. Amongst 31 cases under hydrochlorothiazide therapy, 25 showed an average

fall of 8·1 mg. per cent in blood urea level. Electrocardiographic changes were seen in 14 out of 31 cases who received hydrochlorothiazide treatment. The changes observed were low, flat or inverted T wave, depression of ST segment and development of U waves. The average fall in the plasma potassium level was 1·06 mEq. per litre. Marked electrocardiographic changes were seen in Case 4 with maximum fall of 1·0 mEq. in the plasma potassium level. Moderate electrocardiographic changes were seen in cases with 1·3, 1·1, 1·0, 0·9, 0·8, 0·6, 0·5 mEq. per litre fall in the plasma potassium levels. The other cases which showed mild changes in the electrocardiography had a fall of 3, 1·9, 1·6, 1·3, 0·7 mEq. in the plasma potassium levels.

On the other hand, there were patients in whom fall in plasma potassium recorded were 2·3, 2·3, 1·8, 1·6, 1·6, 1·3, 1·3, 1·1, 1·0, 1·0, 0·8, 0·8, 0·5, 0·3, 0·3, 0·2, 0·2 mEq. per litre with no electrocardiographic changes.

Clinical evidence of hypopotassaemia with muscular weakness, semiconsciousness and low pulse volume was seen in Case 4 with plasma potassium level of 1·0 mEq. per litre and electrocardiographic changes (Figs. 7 and 8). Case 2 who developed clinical features of hypopotassaemia with marked muscular weakness had plasma potassium level of only 0·6 mEq. per litre, and showed moderate electrocardiographic changes in the form of low T waves in L_{2}, L_{3}, AVF, V_{2}, V_{3}, V_{4}, V_{5}, V_{6}, and flat T waves in L_{1}. The electrocardiographic changes in Case 16 are shown in Figs. 9 and 10.

Side-reactions during hydrochlorothiazide treatment were a few. Case 7 had abdominal pain for a few days, and Case 16 felt nausea for a couple of days. Case 17 developed purpuric sports over the trunk, abdomen and upper extremity on the 7th day which disappeared a week after cessation of treatment.

Discussion

Hydrochlorothiazide appears to be a potent diuretic. Its main action appears to be inhibition of renal tubular reabsorption of sodium and chloride resulting in a secondary increase in water excretion. A dose of 75 mg. of hydrochlorothiazide produced a quantitative and qualitative response similar to that following 1 g. of chlorothiazide (Singh, 1961). With hydrochlorothiazide the average daily diuresis was 1674 ml. and with chlorothiazide 1665 ml. The average daily diuretic response in cirrhosis of the liver with hydrochlorothiazide therapy was better (1815 ml.) as compared to chlorothiazide (762 ml.). It was similar in oedema of anaemia with hypoproteinaemia (with chlorothiazide 1917 ml., with hydrochlorothiazide 1938 ml.) but slightly less in cases of congestive heart failure (with chlorothiazide 1896 ml., with hydrochlorothiazide 1536 ml.) and nephritis (with chlorothiazide 1685 ml., with hydrochlorothiazide 1476 ml.).

With hydrochlorothiazide therapy cases of cirrhosis of the liver responded well. Of 14 cases, only one developed into precoma stage, who, however, ultimately came round with 5 per cent glucose, vitamin B complex, tetracycline, colon wash and potassium chloride treatment.

The pattern of electrolyte excretion in treatment with hydrochlorothiazide is different (Tables 1 and 2). The average falls in the concentrations of the plasma sodium, chloride and potassium were 17, 16·3 and 1·06 mEq. per litre respectively, the corresponding figures for chlorothiazide being 13·8, 18·25 and 1·4 mEq. per litre. The average urinary excretions of these three electrolytes during hydrochlorothiazide therapy were 47·9, 45·5, 28·2 mEq. per twenty-four hours as compared to 64·64, 45·89 and 52·7 mEq. for chlorothiazide. The falls in the concentrations of plasma and urinary excretion of potassium were less with hydrochlorothiazide treatment than with chlorothiazide. Besides its action on the excretion of chlorides, chlorothiazide produces inhibition of carbonic anhydrase. This may explain why chlorothiazide produces considerable hypokalaemia (Slater and Nabarro, 1958). Hydrochlorothiazide was less inhibitory *in vitro* to carbonic anhydrase, and in animal experiments it was less active in promoting potassium excretion (de Stevens *et al*, 1958).

The results in various other clinical conditions compared favourably, except in potassium excretion, in anaemic patients with hypoproteinaemia during hydrochlorothiazide therapy. The average urinary excretion of sodium, chloride and potassium in anaemia with hypoproteinaemia was with chlorothiazide 93·7, with hydrochlorothiazide 70·8 ; with chlorothiazide 105·3, with hydrochlorothiazide 58·4 ; with chlorothiazide 34·75, with hydrochlorothiazide 68 mEq. per twenty-four hours respectively. The results of urinary excretion of electrolytes were best seen in patients with congestive heart failure. The figures for sodium, chloride and potassium were : with chlorothiazide 44·78, with hydrochlorothiazide 25·5 ; with chlorothiazide 47·07, with hydrochlorothiazide 28·6 ; with chlorothiazide 44·4, with hydrochlorothiazide 22·9 mEq. per twenty-four hours respectively. Similar results were observed in nephritis for which the average figures were : with chlorothiazide 72·8, with hydrochlorothiazide 17·4 ; with chlorothiazide 37·6, with hydrochlorothiazide 35·6 ; with

chlorothiazide 34·7, with hydrochlorothiazide 27·4 mEq. per twenty-four hours respectively. The biochemical abnormalities in urine in cirrhosis of the liver were for sodium: chlorothiazide 18·8, hydrochlorothiazide 60·9; for chloride: chlorothiazide 13·76, hydrochlorothiazide 40·9; and for potassium: chlorothiazide 5·13, hydrochlorothiazide 25·5 mEq. per twenty-four hours. Here the urinary biochemical figures were high in the hydrochlorothiazide group. This could be explained by poor diuresis (762 ml.) during chlorothiazide and marked diuresis (1815 ml.) during hydrochlorothiazide therapy in this disease.

Platts (1959) observed a fall of plasma potas-

FIG. 7—ELECTROCARDIOGRAM BEFORE HYDROCHLOROTHIAZIDE TREATMENT (CASE 4)

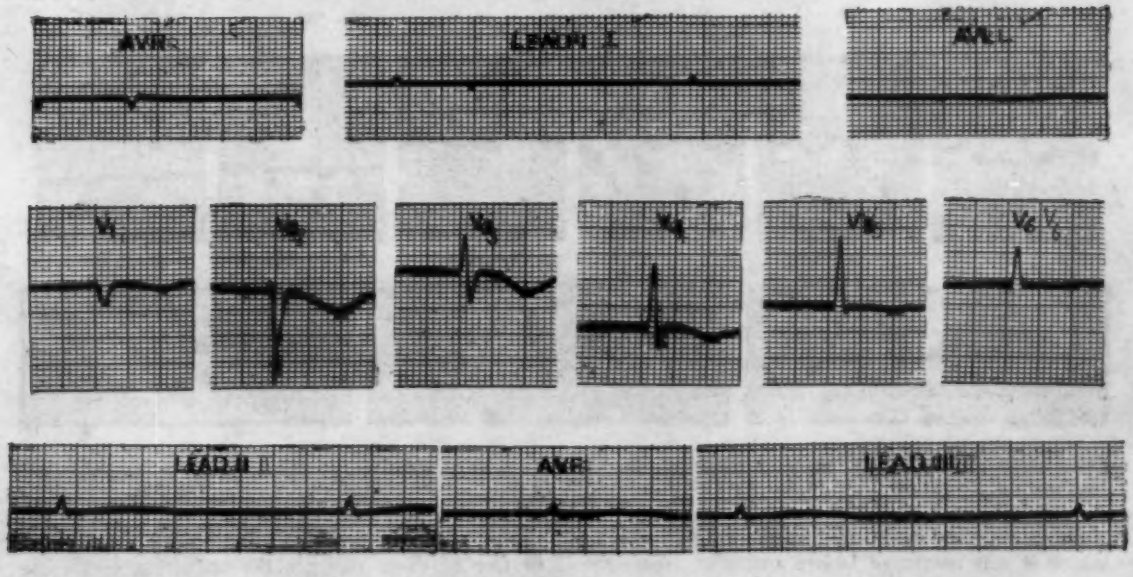

FIG. 8—ELECTROCARDIOGRAM AFTER HYDROCHLOROTHIAZIDE TREATMENT SHOWING FLAT T WAVES IN L_3, L_2, AVF, V_1 AND INVERTED T WAVES IN V_2, V_3, V_4, V_5, V_6, AND HEART BLOCK (CASE 4)

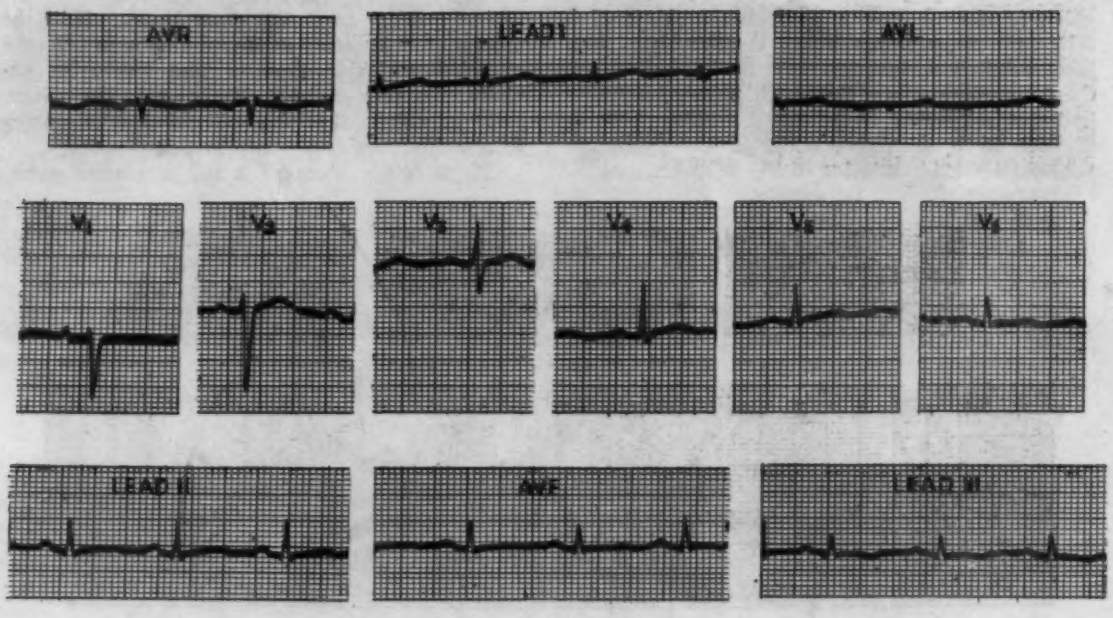

FIG. 9—ELECTROCARDIOGRAM BEFORE HYDROCHLOROTHIAZIDE TREATMENT (CASE 16)

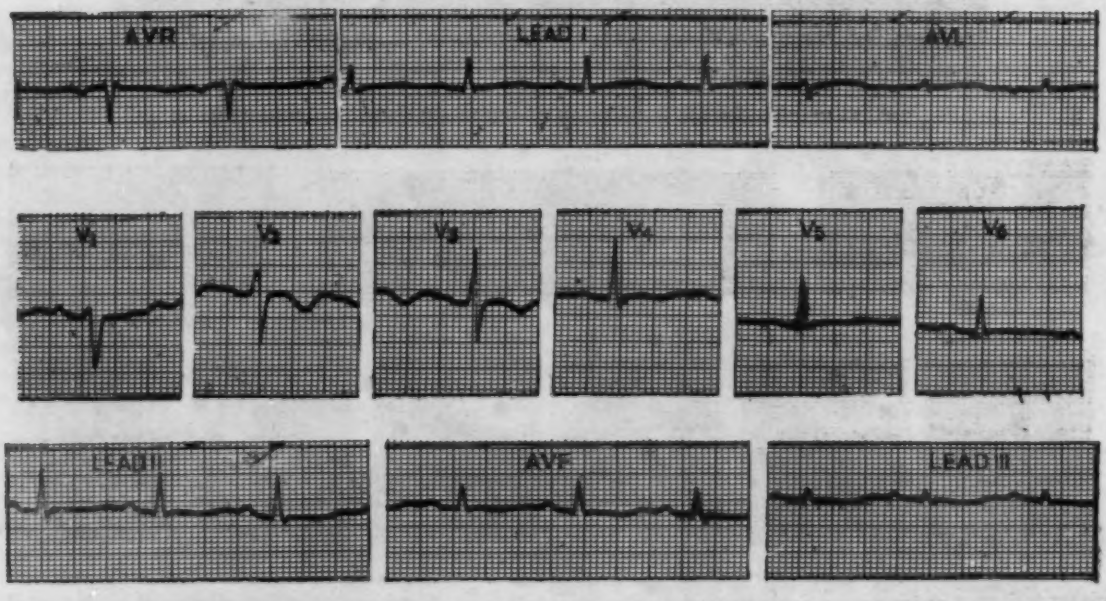

FIG. 10—ELECTROCARDIOGRAM AFTER HYDROCHLOROTHIAZIDE SHOWING DEPRESSION OF ST SEGMENT IN L_2, AVF AND T WAVES LOW IN L_2, FLAT IN L_3, BIPHASIC IN V_1, V_2, INVERTED IN V_3, V_5, V_6 (CASE 16)

sium concentration in 9 out of 11 patients in which it was measured before and after treatment with hydrochlorothiazide. In 7 patients treated for 10 days or longer, the changes in potassium concentration ranged from 0·4 to 3·2 mEq/l and in five of these patients the reduction was more than 1 mEq/l. None of these had symptoms attributable to potassium depletion.

TABLE 1—SHOWING PLASMA ELECTROLYTES (MEQ/L.) AND BLOOD UREA (MG./100 ML.) BEFORE AND FOLLOWING 10 DAYS OF HYDROCHLOROTHIAZIDE THERAPY

Case No.	Before Hydrochlorothiazide				After Hydrochlorothiazide			
	Sodium	Chloride	Potassium	Urea	Sodium	Chloride	Potassium	Urea
			GROUP A: ANAEMIA AND HYPOPROTEINAEMIA					
2	93·5	75	2·6	37	80·4	60	2	59·4
9	102·2	83	2·6	37·8	67·4	70·5	1·8	29·5
10	100	79·4	3·6	60·9	91·3	70·5	3·1	56·7
28	126·1	91·6	4·1	39	108·7	47·9	3·1	26·0
			GROUP B: CIRRHOSIS OF LIVER					
1	97 8	77·5	2·6	32·5	71·7	70·5	1·3	35·3
3	56·5	94	1·5	25	52·2	77·5	1·3	32·4
7	89·1	83	2·3	37·8	97·8	79	3·1	20·5
11	73·9	90·2	2·0	46·7	65·2	80·3	1·8	65·1
15	143·5	93·3	4·6	37	65·2	86·5	2·8	33
16	78·3	84	2·3	37	60·9	64·2	1·4	33
19	76·1	107·2	6·9	56·7	54·3	42·8	4·6	35
20	97·8	95·8	3·3	59·4	78·3	86·4	2·0	42
21	84·8	87·4	3·1	38	73·9	81·7	2·0	34
22	93·5	64·8	6·4	40	84·8	42·3	5·1	32
26	78·3	95·8	2·6	33	65·2	87·4	1·0	28
27	76·1	90·2	1·8	36	66·9	81·7	1·5	33
29	93·0	91·6	4·6	27	73·9	76·1	2·3	25·7
30	82·6	70·3	5·6	27	73·3	62·2	2·6	33·6
			GROUP C: CONGESTIVE HEART FAILURE					
			(a) Mitral disease					
5	100	69·3	3·6	30	60·9	64·8	2·0	27
6	104·3	96·3	3·1	30	97·8	77·5	1·5	50
8	76·1	75	2·3	29·7	69·6	70·5	2·0	51·3
12	41·3	83·2	2·8	37·8	36·9	77·5	2·3	33
			(b) Cor pulmonale					
14	78·3	77·5	3·8	45·5	56·5	43·7	3·1	40
31	96·4	84·6	4·6	36	78·3	70·5	3·6	27
			(c) Hypertensive heart disease					
23	84·8	93·2	2·3	45	43·5	56·4	1·0	38
			(d) Coronary heart disease					
18	97·8	91·9	2·6	43	80·4	53·4	1·8	39
4	102·2	80·3	3·8	90	76·1	70·5	2·8	54
			GROUP D: NEPHRITIS					
13	102·2	85·7	4·3	44	95·6	75·5	3·8	42
17	108·7	97·2	2·9	45	52·6	91·6	1·9	39
24	110·9	95·8	2·6	42	95·6	70·5	1·5	38
25	115·2	95·8	3·3	41	93·5	67·6	1·4	37

TABLE 2—SHOWING EFFECTS OF HYDROCHLOROTHIAZIDE ON URINE VOLUME (ML.) AND ELECTROLYTES (MEQ/24 HOURS) AND CLINICAL RESPONSE

Case No.	Before Hydrochlorothiazide				After Hydrochlorothiazide				Clinical response
	Sodium	Chloride	Potassium	Urine in 24 hrs. (ml.)	Sodium	Chloride	Potassium	Urine in 24 hrs. (ml.)	
GROUP A: ANAEMIA AND HYPOPROTEINAEMIA									
2	1·04	0·06	0·64	60	19·6	11·5	11·7	960	Fair
9	182·6	174·5	30·6	3000	195·6	26·8	145·7	3000	Very good
10	2·35	18·2	4·1	180	46·9	91·6	59·3	1080	Very good
28	26·6	14·9	19·0	240	234·7	141 0	72·3	2040	Good
GROUP B: CIRRHOSIS OF LIVER									
1	2·1	3·1	2·2	330	15·6	22·8	23·1	1800	Fair
3	133·5	117·4	13·2	1920	169·6	152·2	21·5	2400	Very good
7	2·6	4·8	13·4	300	71·3	46·6	83·1	1800	Fair
11	35·9	27·2	31·1	720	110·9	97·5	78·2	2040	Good
15	18·8	2·2	55·8	180	191·3	42·3	62·1	1800	Very good
16	7·8	21·5	26·2	900	10·8	29·3	31·4	900	Good
19	48·9	16·4	13·8	900	139·6	59·2	36·7	2220	Very good
20	2·6	5·6	1·9	120	14·3	35·8	10·7	600	Fair
21									Poor
22	20·3	1·03	6·9	360	77·4	22·3	13·9	1320	Very good
26	12·4	5·5	4·2	300	21·0	10·8	7·9	480	Very good
27	117·6	65·9	21·2	720	324·1	65·1	223·3	1800	Good
29	1·6	4·7	5·6	210	22·6	31·5	15·6	420	Good
30	5·2	5·7	9·8	240	32·8	39·9	84·3	1200	Very good
GROUP C: CONGESTIVE HEART FAILURE									
(a) Mitral disease									
5	43	33·5	5·9	330	104·3	75·2	70·0	900	Fair
6	33·9	37·2	16·1	600	53·6	25·3	79·3	900	Fair
8	93·9	81·4	11·5	1800	118·3	98·7	29·3	2100	Very good
12	2·1	2·7	7·0	240	5·9	25·2	31·0	450	Poor
(b) Cor pulmonale									
14	12·8	3·4	1·7	120	148·7	51·3	38·3	1200	Very good
31	7·3	24·3	49·5	1440	18·7	51·6	78·0	2160	Very good
(c) Hypertensive heart disease									
23	2·1	5·9	5·9	330	3·5	10·8	9·2	480	Very good
(d) Coronary heart disease									
18	2·7	1·4	7·1	330	13·3	19·7	37·5	1230	Fair
4	4·4	5·3	1·35	120	36·4	43·1	46·2	930	Fair
GROUP D: NEPHRITIS									
13	2·7	6·3	8·9	300	2·6	5·4	7·8	240	Poor
17	2·1	6·3	1·6	330	23·9	65·7	56·2	2760	Very good
24	4·7	17·7	11·0	930	13·7	53·0	29·3	2100	Fair
25	16·9	6·3	6·3	300	38·3	18·3	15·7	660	Good

	Group A	Group B	Group C	Group D
Average fluid intake (ml.)	807	849	849	957
Average urinary output (ml.)	1938	1815	1536	1479
Mean daily loss of weight (g.)	494·42	716·68	616·90	589·68

Clinically, hypopotassaemia was noticed in two cases, one of mild and another of severe nature with electrocardiographic changes of potassium deficiency, inspite of very little depletion of serum potassium. When the hypokalaemia is severe, apathy, drowziness, anorexia, nausea, paralytic ileus, hypotension and shallow infrequent respiration are found. Moyer (1959) observed that hydrochlorothiazide is more likely to produce potassium depletion (hypokalaemia) than chlorothiazide and flemethiazide, whereas Schwartz *et al* (1959) in their series of 83 cases with hydrochlorothiazide found no evidence of hypokalaemia in the serum or in the electrocardiographic studies, nor did any one of them complain of weakness at any time during the study. They advocate these findings as instances of distinct advantage of hydrochlorothiazide over chlorothiazide. In animal experiments, the kaliuretic effect was the same for both chlorothiazide and hydrochlorothiazide. This casts further doubt on the role of potassium in the production of weakness with chlorothiazide and lack of weakness with hydrochlorothiazide (Schwartz *et al*, 1959).

The increase in potassium excretion produced by chlorothiazide is slightly higher than that produced by hydrochlorothiazide, although both these diuretics cause potassium depletion and potassium supplement should therefore be given during treatment.

Electrocardiographic changes were observed in 14 cases which did not always correlate with fall in the plasma potassium concentration. Electrocardiographic changes are not always parallel to the blood level and has been considered at times to correlate better with the cellular potassium (Keith *et al*, 1958). Electrocardiograms should therefore be accepted only as a rough guide in managing electrolytic imbalance and should always be considered in correlation with clinical and laboratory findings.

The average fall in blood pressure was, systolic 7 mm. Hg, diastolic 6 mm. Hg. The patients were normotensives. This minor fall in systolic and diastolic blood pressure might be due to continued bed rest. Freis (1959) observed that chlorothiazide does not reduce blood pressure in normotensive subjects, although this drug induces loss of salt from the extracellular fluid. On the contrary, in hypertensive subjects this small excretion from the extracellular fluid produces a sustained reduction in the extracellular fluid space and plasma volume which may play a role in reducing the basal blood pressure. When given with ganglionic blocking agents, it enhances their hypotensive effect and diminishes their requirements (Smirk *et al*, 1960). The effect of hydrochlorothiazide in the drainage of oedematous fluid and disappearance of oedema from different parts of the body was marked. The radiographic changes were conspicuous after this (diuretic) therapy. The disappearance of the congestion of the lungs and effusion in the pleural sac, and reduction of the size of the heart in certain cases were remarkable (Figs. 1 and 2, *vide* Plate).

Summary

Clinical and metabolic studies of 31 cases of oedema treated with hydrochlorothiazide are reported.

The average daily fluid intake was 783 ml. and the average daily diuresis was 1674 ml.

The average mean daily weight loss was 603·28 g.

The average fall in plasma sodium, chloride and potassium was 17, 16·3 and 1·06 mEq. per litre respectively.

The average urinary excretion of sodium, chloride and potassium was 47·9, 45·5 and 28·2 mEq. per twenty-four hours.

Disappearance of fluid from pleural cavities and clearing of the congestion of the lungs were marked in the skiagrams.

Electrocardiographic changes of hypopotassaemia were noted in fourteen cases.

Side-reactions like nausea, abdominal pain and purpuric spots over the body, were a few but in no instance was the drug withdrawn because of signs of intolerance.

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References

De Stevens, G., Werner, L. H., Halmandaris, A. and Ricca, S.—*Experientia* (Basel), **14** : 46), 1958.

Freis, E. D.—*J.A.M.A.*, **169** : 105, 1959.

Hanley, T.—*Practitioner*, **177** : 744, 1956.

Keith, J. D., Rowe, R. D. and Viad, P.—Heart Disease in Infancy and Childhood, 1958, Macmillan, London, p. 790.

Moyer, J. H.—*J.A.M.A.*, **170** : 2048, 1959.

Moyer, J. H., Fuchs, M., Irie, S. and Bodi, T.—*Am. J. Cardiol.*, **3** : 113, 1959.

PLATTS, M. M. AND HANLEY, T.—*Brit. M. J.*, **1**: 1078, 1956.
PLATTS, M. M.—*Lancet*, **1**: 357, 1956.
Idem—*Brit. M. J.*, **1**: 1565, 1959.
RELMAN, H. S., LEAF, A. AND SCHWARTZ, W. B.—*New England J. Med.*, **250**: 800, 1954.
SCHWARTZ, G., STECHEL, G. H., FISHMAN, S. I. AND FRANKHAUSER, A.—*J.A.M.A.*, **170**: 2057, 1959.
SINGH, H. N.—*J. Indian M. A.*, **36**: 133, 1961.
SLATER, J. D. H. AND NABARRO, J. D. N.—*Lancet*, **1**: 124, 1958.
SMIRK, H., MCQUEEN, E. G. AND MORRISON, K. B. I.—*Brit. M. J.*, **1**: 515, 1960.

PLEUROPULMONARY AMOEBIASIS COMPLICATING LIVER ABSCESS

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The literature available on this subject is very scanty. This is due to the rarity of this illness in colder climates. A pleuropulmonary complication of liver abscess is a rare entity in temperate countries (Craig, 1944).

INCIDENCE

The exact incidence of this complication is not known. Ochsner and De Bakey (1936) reported that of their 95 cases of amoebic hepatic abscess only 15·7 per cent had pleuropulmonary complications. In 1946, they reported that the incidence was about 20 per cent. Shaw (1949) calculated that there will be complications within the thoracic cage in approximately 15 per cent of patients with hepatic abscess. The incidence in India is not known, but the authors have seen 10 cases of this complication. Regarding the incidence of sex, it has been found that males predominate over females (Craig, 1944). In our series all the patients were males. The age incidence is usually between 20 and 50 years, and in our series it was between 25 and 53 years.

PATHOLOGY

Pleuropulmonary amoebiasis following liver abscess can occur in the following manner. There may be contiguous spread through the diaphragm, or transdiaphragmatic lymphatic extension or embolic spread through the circulation. In about 75 per cent of cases it occurs by rupture of a liver abscess directly through the diaphragm. Usually the hepatic abscess of the right lobe ruptures into the right side of the chest, and that of the left lobe into the left pleural cavity. Rarely the abscess may rupture into the pericardium. Such a rupture may cause a generalised empyema, or it may lead to only supradiaphragmatic localised empyema as happened in one of our cases. The rupture can occur directly into the lung forming a lung abscess, without affecting the pleural cavity—the latter escapes because of the adhesions that may have been formed from the inflammatory process. Lung abscesses, as seen in the upper or middle lobe, are not necessarily embolic in origin, but can be due to direct extension of the hepatic abscess through a track. We had a case, where hepatic abscess had directly traversed the lung to form a localised pleural abscess in the midzone, through a track which could be well seen at the operation table as well as in the chest skiagram. The lung abscess may communicate with the bronchus, as happened in most of our cases. Rarely, the abscess may rupture into the pleural cavity, resulting in pyopneumothorax, as we found in one of our cases. A bronchohepatic fistula may form if the hepatic abscess ruptures into the bronchus only. Rarely, a bronchobiliary fistula may form if an abnormal communication between the bile duct system and bronchi occurs. Lastly, an iatrogenic complication may occur, that is an aspiration abscess. This may not be adjacent to the diaphragm, but is seen at the aspiration site after an aspiration for empyema complicating a hepatic abscess. This was found in one of our cases.

SYMPTOMS AND SIGNS

The symptoms and signs of this complication in the present series are shown in Tables 1 and 2.

TABLE 1—SHOWING ANALYSIS OF THE RESPIRATORY SYMPTOMS IN RELATION TO THEIR INCIDENCE IN 10 CASES

Symptoms	No. of cases
Cough	6
Fever	10
Pain, right shoulder	3
Pain, right lower chest	7
Pain, left lower chest	1
Haemoptysis	5
Foul smelling sputum	2
Anchovy sauce sputum	1
Breathlessness on exertion	1

TABLE 2—SHOWING ANALYSIS OF THE PHYSICAL SIGNS IN RELATION TO THEIR INCIDENCE IN 10 CASES

Signs	No. of cases
Palpable liver	3
Tenderness of right hypochondrium ...	10
Dullness, right lower lobe	8
Rales, right base	2
Poor breath sounds, right base	10
Pleural rub	1
Diminished tactile V.F., right base ...	8
Signs of pneumothorax	1
Signs of pyopneumothorax	1

DIAGNOSIS

When a patient with liver abscess complains of pain in the right lower chest or pain in the right shoulder, a pleuropulmonary complication should be suspected. The same holds true for such patients if they start getting cough which may be dry or with haemoptysis or with anchovy sauce like sputum or rarely with a very foul smelling greenish yellow expectoration. These patients usually show other symptoms of infection, such as septic type of fever with or without chills, anorexia, malaise, weakness and loss of weight. The right side of the chest shows signs of fluid in the pleural cavity or a few moist sounds may be present. The difficulty in diagnosis arises, when the symptoms of liver abscess are absent and the liver is not enlarged downwards. In fact this occurred in the majority of our cases. Such patients present themselves with the usual symptoms and signs of pleurisy with effusion or a lung abscess at the right base, and may be diagnosed as cases of tuberculous pleurisy or lung abscess. According to our experience, diagnosis in such cases should be suspected under the following circumstances:

1. If there is a past history of dysentery (but this is more often absent).
2. In chest skiagram of such a case with pleurisy and effusion, if the right dome of the diaphragm can be seen through the fluid, and if it is raised, the complication is very suggestive.
3. If the pleural fluid on tapping shows a very high protein content with innumerable pus cells without any organisms, aspiration should be repeated after few days when we may be rewarded with an anchovy sauce pus or greenish pus diagnostic of rupture of liver abscess. An examination of the purulent material may show vegetative forms of *E. histolytica.*
4. If a case of pleurisy with effusion on the right side, diagnosed as tuberculous, does not respond to the usual anti-tuberculous drugs.
5. If a patient with lung abscess at the right base spits out anchovy sauce like sputum or greenish yellow and foul smelling sputum and shows a tenderness of the hepatic area.

In fact any pleural effusion or lung abscess at the right base should be looked upon with suspicion in this country. Many times the x-ray of the chest gives the diagnostic clue. At times the diagnosis is so difficult, that the real condition is revealed only at the operation table, as happened in four of our cases.

INVESTIGATIONS

If the liver is enlarged and tender and especially if a localised tenderness is present, it should be aspirated. Later, the pleural cavity should be tapped, if signs of effusion are present, and if the same type of pus is obtained from the pleural cavity, it is diagnostic of the complication. The aspirated pus in cases of empyema and the sputum in cases of lung abscess, should be sent for pathological examination for detection of amoebae. This was negative in most of our cases, because for a search of the amoebae, the specimen should be examined immediately and secondly they should be mounted in normal saline. In our cases three types of sterile pus had been aspirated, viz., (a) frankly purulent, (b) anchovy pus, and (c) blood mixed with pus.

Blood examination—In our cases the haematological findings were of no help in the diagnosis. These are supposed to be related to the duration of the hepatic abscess (Lamont and Pooler, 1958). Patients with a short history tend to show no anaemia but only appreciable leucocytosis, whereas those with a long history show anaemia but less marked leucocytosis. Raised serum bilirubin levels are rarely seen.

Stool examination—This was negative in all our cases. The examination may be helpful if cysts of *E. histolytica* can be demonstrated.

X-ray appearances—A hump-like localised elevation of the diaphragm is seen best in the lateral view (Fig. 1, *vide* Plate). However, after rupture of the abscess into the pleural cavity this appearance is not often present, and the opacity of the liver becomes continuous with the opacity in the right side of chest (Fig. 2, *vide* Plate). In empyema, the appearance is like that of fluid in the pleural cavity (Fig. 3, *vide* Plate).

Since the lung is adherent to the diaphragm the collection of pleural exudate may be more lateral than basal (Fig. 4, *vide* Plate). The pleural fluid may be loculated only in supra-diaphragmatic region (Fig. 5, *vide* Plate). If lung abscess is formed, there will be seen a shadow in the right lung (Fig. 6, *vide* Plate). There may or may not be a fluid level, depending on whether the abscess has ruptured into the bronchus or not.

If the abscess is higher up, a track may be seen going up from the liver (Fig. 7, *vide* Plate). Pneumoperitoneum may be useful at times in actually showing the track from the liver into the lung as was found in one of our cases (B.R.B.) (Fig. 8, *vide* Plate). Rarely a bronchogram if done may show a supradiaphragmatic abscess (Fig. 9, *vide* Plate). A pyopneumothorax may be seen, if the lung abscess has burst into the pleural cavity (Fig. 10, *vide* Plate).

Management

In the past, surgical treatment was more often resorted to because of the absence of suitable drugs for medical treatment. In addition to emetine, we have now chloroquine which is a very effective amoebicidal drug and is non-toxic even in high doses. The broad spectrum antibiotics, like aureomycin, act partly on amoebic infection, but more so on any secondary infection which may be present. In the past, the toxicity of emetine was overstressed, specially its toxic effect on the myocardium. Although this dreadful complication is not denied it must be very rare (Tolat, personal communication). We have not, however come across this complication even with a total dose of 15 gr. Routine electrocardiograms taken during treatment with emetine have removed the fear which often led physicians to use a small dose. In pleuropulmonary complication of amoebic abscess of liver, we have given injections of emetine in 1 gr. daily doses, deep subcutaneously or intramuscularly, up to a period of 15 days. However, a watch must be kept for any sign of toxicity and symptoms like muscular weakness, severe diarrhoea, nausea and vomiting, myocarditis, nervous prostration and neuritis, which should lead to revision of the opinion for further continuation of the drug.

Chloroquine is almost as good an amoebicidal drug as emetine. It is readily absorbed and may be concentrated in the liver and thoracic organs up to 500 times its concentration in the plasma (Sodeman and Lewis, 1945). It should be given orally in doses of 4 tablets (0·6 g. base each) once a day for two days and then two tablets once a day for a month or two or longer if there is steady improvement. Its toxicity is minimal.

Aureomycin is also an amoebicidal drug (David and Guruswami, 1958). To minimise the chances of surgery, it is better to try polytherapy, and to include a course of aureomycin in daily dosage of 0·25 g. four times a day for 3 to 4 weeks. It is a harmless drug and has only a few negligible side effects.

Apart from the above therapy, repeated aspirations of the liver abscess and the empyema are very important. In case of liver abscess aspiration is done at the most tender spot or wherever local bulging is present. When pus is obtained, as much of the pus as possible should be aspirated. The procedure should be repeated as often as necessary. Local instillation of emetine or chloroquine is of no value. As a rule, even though the hepatic abscess has ruptured through the diaphragm into the lung or pleura, and has found an outlet, the symptoms of pleuropulmonary amoebiasis decrease with evacuation of the liver abscess.

The rest of the treatment will vary with the type of complication. If it is a lung abscess communicating with the bronchus, postural drainage should be done concomitantly with aspiration of the liver abscess.

The following are the indications for surgery:

1. Where secondary infection has occurred and is not responding to a short course of broad spectrum antibiotics.
2. An empyema which cannot be cured by repeated aspirations.
3. A lung abscess not responding to medical treatment. In such a case, if with medical treatment the abscess is not showing any improvement, as seen by repeated x-ray examinations, surgery should be resorted to.
4. When fibrosis of pulmonary tissue as a result of the abscess is left behind and produces symptoms.
5. In cases of persistent abnormal channel between the bile duct and the bronchus.

Pleuropulmonary complications are usually best handled by thoracotomies, employing reparative surgery with external drainage. In case of empyema which will not clear with repeated aspirations, a thoracotomy can be done, and a decortication of the lung and diaphragm performed. In case of lung abscess, resection of that part of the lung should be resorted to. It is not necessary to employ any subsequent counterdrainage for the hepatic abscess.

References

Craig, C. F.—The Aetiology, Diagnosis and Treatment of Amoebiasis, 1944, Williams & Wilkins, Baltimore, p. 156.

David, J. C. Iswariah and Guruswami, M. N.—Pharmacology and Pharmacotherapeutics, 1958, P. Varadachary & Co., Madras, p. 634.

Lamont, N. McE and Pooler, N. R.—*Quart. J. Med.*, **27**: 389, 1958.

Ochsner, A. and De Bakey, M.—*J. Thoracic Surg.*, **5**: 225, 1936.

Idem—Ibid, **5**: 225, 1946.

Shaw, R. R.—*Surg. Gynec. & Obst.*, **88**: 753, 1949.

Sodeman, W. A. and Lewis, B. O.—*J.A.M.A.*, **99**: 129, 1945.

Tolat, R. F.—*Personal communication.*

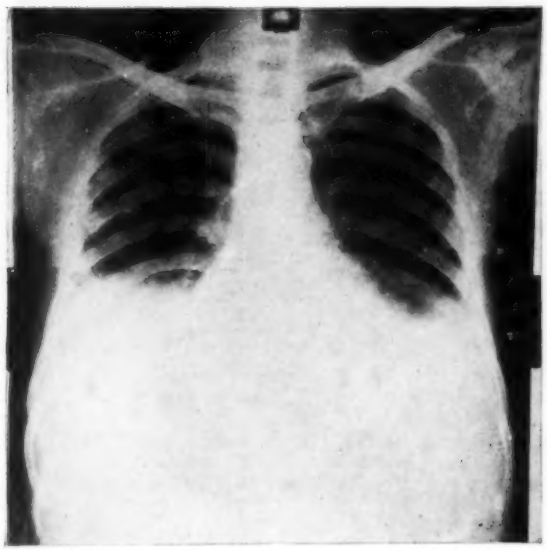

Fig. 1—Skiagram of a case of cirrhosis of liver showing bilateral hydrothorax (Case 22).

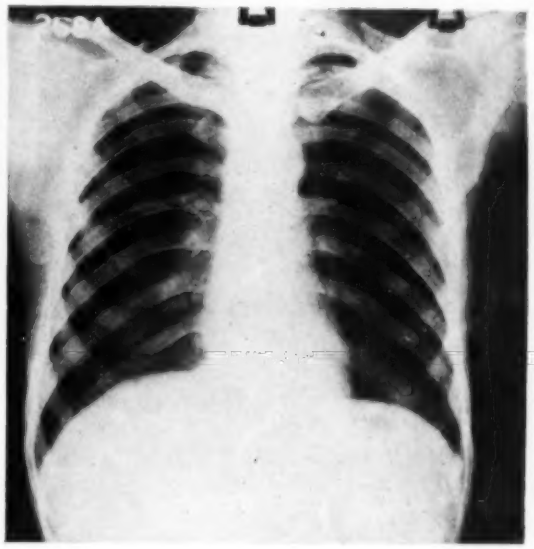

Fig. 2—Skiagram of the same case showing disappearance of hydrothorax after hydrochlorothiazide treatment.

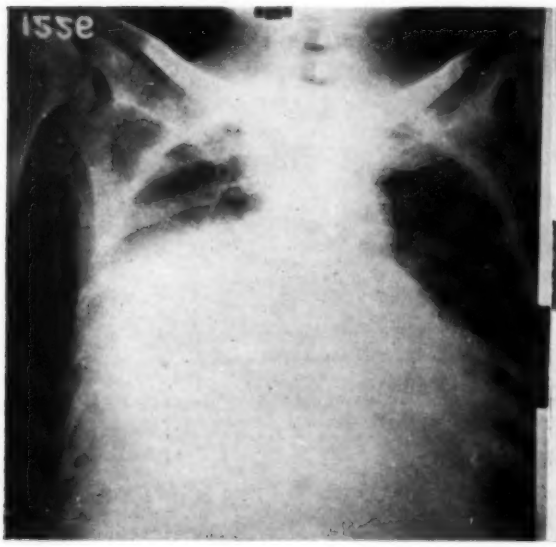

Fig. 3—Skiagram of a case of coronary heart disease showing massive pleural effusion on the right side (Case 4).

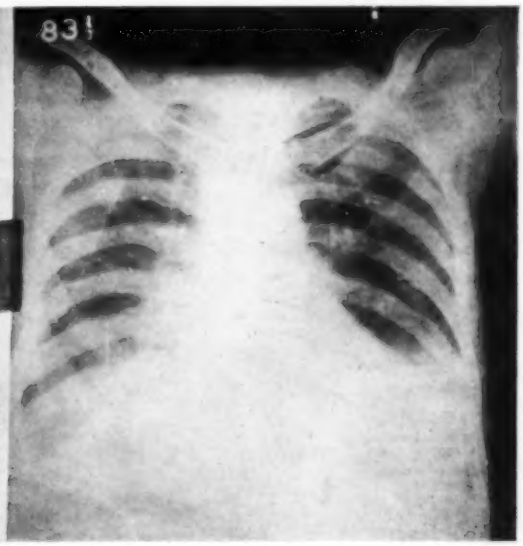

Fig. 4—Skiagram of the same case showing disappearance of pleural effusion after hydrochlorothiazide treatment.

Fig. 1—Skiagram (lateral view) showing a hump-like localised elevation of the diaphragm.

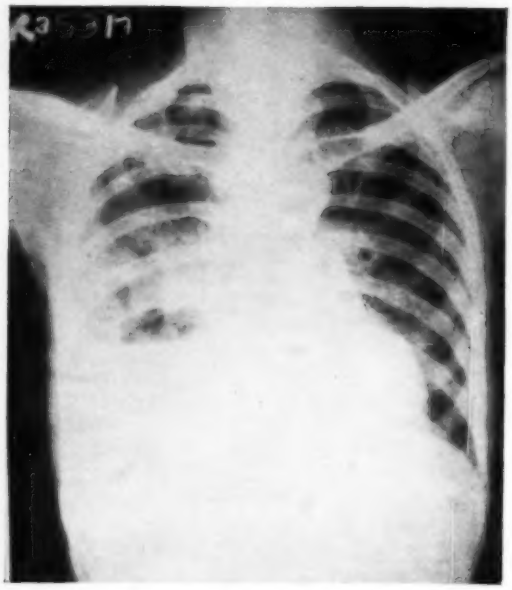

Fig. 2—Skiagram showing disappearance of the 'hump' of the diaphragm, after rupture of the liver abscess.

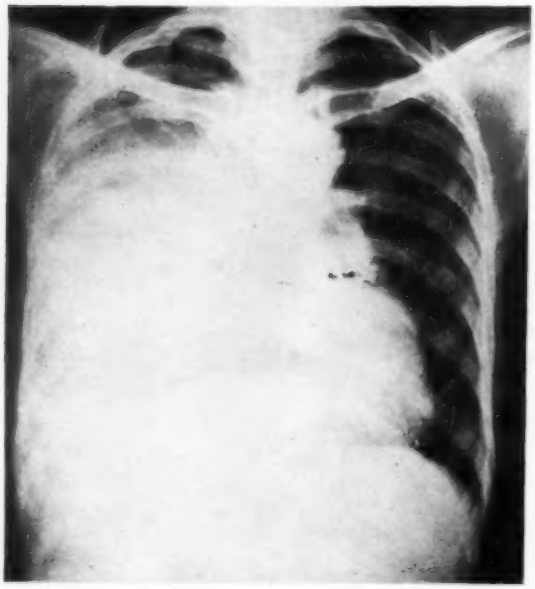

Fig. 3—Skiagram showing empyema.

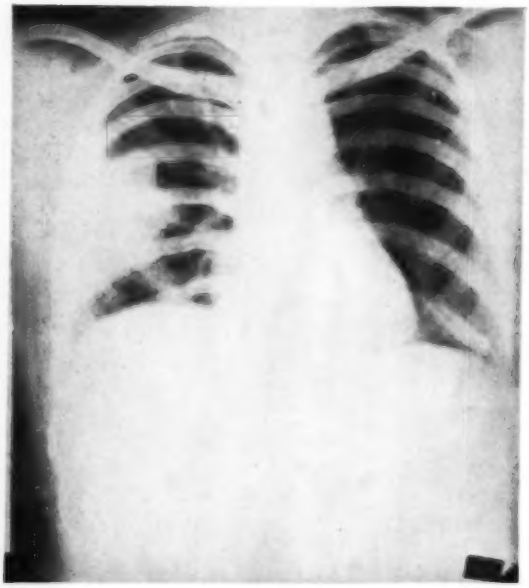

Fig. 4—Skiagram showing lateral position of the pleural exudate, due to adhesion of lung with diaphragm.

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Fig. 5—Skiagram showing loculation of the pleural fluid in the supradiaphragmatic region.

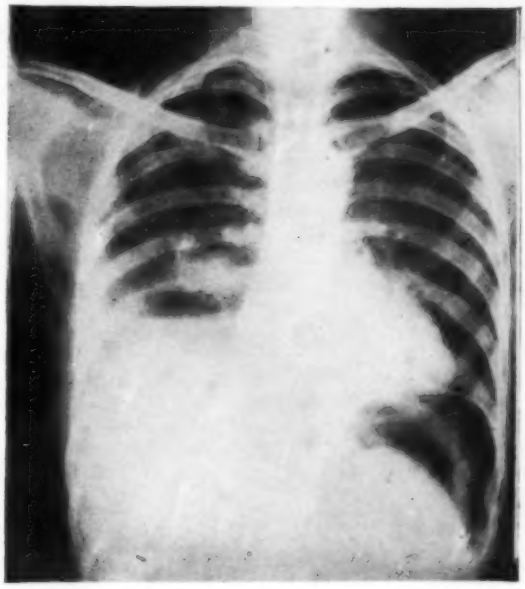

Fig. 6—Skiagram showing shadow of abscess in the right lung.

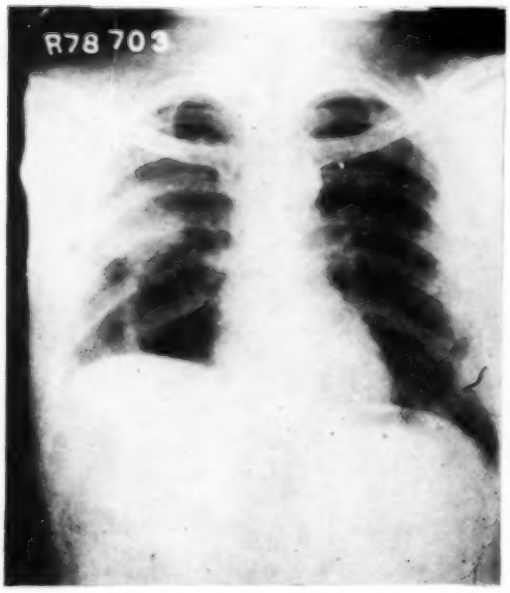

Fig. 7—Skiagram showing a 'track' going up from the liver to the abscess in the right lung.

Fig. 8—Skiagram (pneumoperitoneum) showing a 'track' from the liver into the lung.

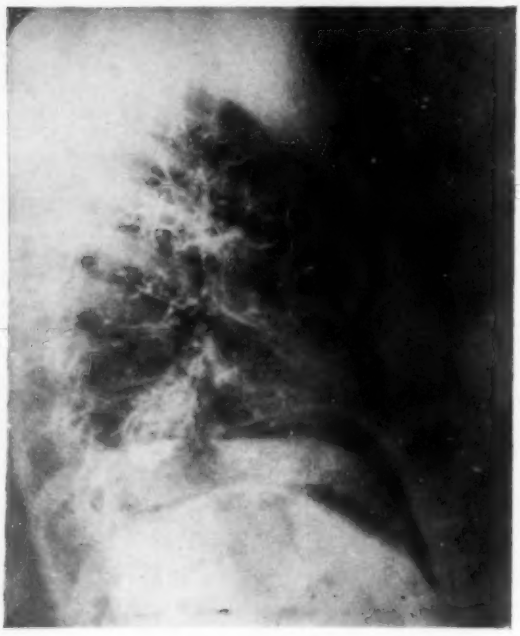

Fig. 9—Bronchogram showing a supradiaphragmatic abscess.

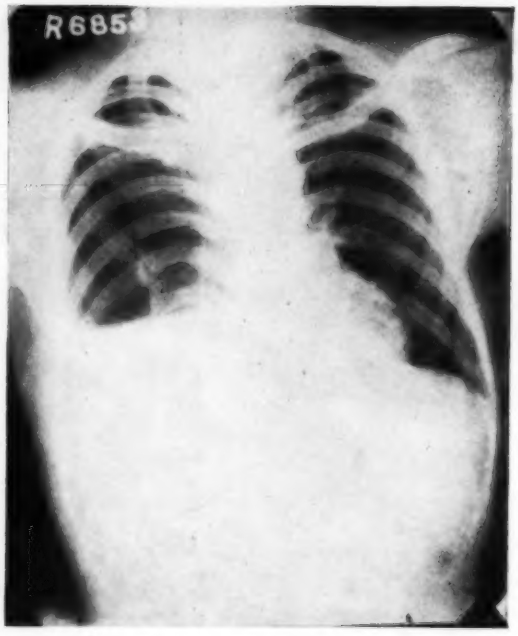

Fig. 10—Skiagram showing pyopneumothorax caused by bursting of a lung abscess into the pleural cavity.

KAPOOR *et al*— *Pleuropulmonary Amoebiasis Complicating Liver Abscess (p. 506)*

Fig. 1—Showing constricting bands on the little toes of both feet.

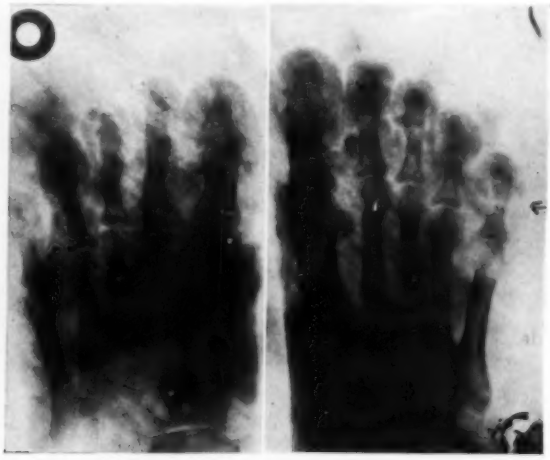

Fig. 2—Skiagrams showing thinning of the phalanx of the right little toe and a line of cleavage in the middle resembling fracture (shown by arrow). Other two phalanges are atrophied.

MANCHANDA—*Ainhum (p. 532)*

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LABORATORY CONTROL IN THERAPY OF VAGINITIS

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AND
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The three commonest complaints of patients in the gynaecological clinics are menstrual disorders, hypogastric pain and leucorrhoea.

The authors had been working on the last one. From several cases of vaginitis *Trichomonas vaginalis* and *Candida albicans* had been isolated and identified in the laboratory. Results of this work are published separately.

While conducting this work in the pathology department of the J. J. Group of Hospitals, Bombay, we first became aware of the odds the clinician had to face in treating cases of vaginitis, and specially those in which the organisms had been successfully grown *in vitro*.

Several drugs in as many modes of administration have been tried in the treatment of vaginitis of similar aetiology. There is an equally confusing number of claims regarding the efficacy of each. While some claim very good results and even cures with simple measures like an acid douche of two tablespoonfuls of household vinegar, others have expressed doubts about the efficacy of such drugs as pentavalent arsenic preparations; and have expressed fears about the side-effects like urticaria, erythema, haemorrhagic rash and other toxic reactions which such drugs produce. Even on the mode of administration of various drugs there are divergent views.

The challenge to the clinician appeared formidable as it was felt that a permanent cure of some cases of trichomonal vaginitis was difficult, if not impossible. For the parasite reappears after a temporary disappearance. That the relapse was due to an incomplete cure, was a possibility which had to be fully investigated before it could be ruled out.

The identification of the cause is important from the point of view of the therapy to be adopted. We, therefore, decided to make yet another attempt to achieve a complete cure, specially in those cases of leucorrhoea in whom the *Trichomonas vaginalis* and *Candida albicans* had been isolated. As these organisms had been grown successfully in the laboratory, a reliable control could now be exercised over the action of the drugs, by repeatedly negative cultures over a period as the criterion for permanent cure. The reappearance of the organisms, if any, after a period of repeatedly negative cultures, would certainly be an indication of incomplete cure, recrudescence or reinfection. The efficacy of the drugs employed could therefore be ascertained.

Material and Methods

The material used for the investigation consisted of 100 cases of leucorrhoea, suffering from vaginitis, that had been studied fully. In these subjects a complete general and pelvic examination had been carried out in addition to the examination of the urine and vaginal discharge, microscopically and culturally. Out of 100 cases, *Candida albicans* had been isolated in 45 cases, and *Trichomonas vaginalis* in 36 cases. In 19 cases no organisms could either be isolated or incriminated for the causation of vaginitis, or leucorrhoea.

For culturing of Trichomonas, the following media were used: (1) S.T.S. medium and (2) Vf. bouillon medium.

For culturing Candida, the material was inoculated on Sabouraud's dextrose or maltose agar with penicillin and streptomycin added as antibiotics. For species identification other media such as Sabouraud's dextrose broth, rice-infusion agar and beef broth tubes with 1 per cent sugar and brom-thymol-blue as the indicator, were used. Dextrose, maltose, saccharose and lactose were the sugars employed.

The first series of 50 cases of leucorrhoea were treated by topical application with oblong tablets or pessaries containing di-iodohydroxyquinoline, phenyl mercury nitrate and neomycin in a base of sodium lauryl sulphate. Phenyl mercury nitrate is bacteriostatic and fungicide and much less toxic than other mercury salts. Di-iodohydroxyquinoline is an antitrichomonal and antifungal antiseptic. Neomycin was added as a wide-spectrum antibiotic which is effective when used topically. It is poorly absorbed from mucous surfaces and sensitising reactions by its use are infrequent. Sodium lauryl sulphate was used as a base for these three drugs and as a detergent. It is also stable over a wide range of pH. The pH of this pessary was 4·5. The results obtained in the first 50 cases are given in Table 1.

The next 50 cases of leucorrhoea were treated on a different line. A combination of the three drugs, viz., di-iodohydroxyquinoline, neomycin and phenyl mercury nitrate, was used in association with an inert wetting agent, viz., dioctyl

TABLE 1—SHOWING RESULTS OF TREATMENT IN THE FIRST FIFTY CASES

Cause of infection	No. treated	No. cured	No. cured, but culture positive	No. with no response or incomplete cure
Trichomonas	21	14 (66·6%)	11 (52·3%)	7 (33·3%)
Candida ...	17	12 (70·6%)	7 (41·1%)	5 (29·4%)
Others ...	12	5 (41·6%)	—	7 (58·4%)

sodium sulphosuccinate. This last chemical is mildly bactericidal, detergent and a potent reducer of surface tension, thus enabling the active constituents of the pessary to spread over a wider area and penetrate deeper in all folds and furrows of the genital tract.

Two more ingredients, amylocaine and amethocaine, were also added. These are local anaesthetics, useful in allaying the distress and the itching sensation the patients have. They are safe and effective. Amethocaine is closely related to procaine but is 10 to 15 times more potent and unlike procaine is well absorbed from mucous surfaces.

The results of this trial are given in Table 2.

TABLE 2—SHOWING RESULTS OF TREATMENT IN THE SECOND FIFTY CASES

Cause of infection	No. examined	No. cured	No. cured, but culture positive	No. with no response or incomplete cure
Trichomonas	15	13 (86·6%)	3 (20 %)	2 (13·4%)
Candida ...	28	19 (67·8%)	14 (36·8%)	9 (32·2%)
Others ...	7	4 (57·1%)	—	3 (42·9%)

DISCUSSION

It has been shown that the presence of *Trichomonas vaginalis* in the vagina indicates infection but *Candida albicans* may be present in the vagina without causing any undue damage to the vaginal mucosa. Thus it would be difficult to assess the effect of drugs on monilial infections. In this paper the therapeutic aspect of leucorrhoea has been dealt with in detail. A high percentage of those treated were clinically cured, but the effectiveness of this cure is not easy to assess.

A 'cure' of trichomonal vaginitis generally denotes 2 or more negative direct microscopic examinations at intervals of a week, together with disappearance or considerable lessening of previous discomfort and discharge. A 'cure' of vaginitis due to monilia and of unknown aetiology denotes merely alleviation of the amount of discharge and discomfort as experienced by the patients.

TRICHOMONAS VAGINALIS :

Of the 21 trichomonad infected cases, 6·6 per cent could be declared as cured (Table 1). But still 52·3 per cent of these cases gave positive results *in vitro* cultures. It is, therefore, presumed that though there was a significant decrease in the initial number of parasites, the infection had persisted in spite of the drugs. This brings out the incompleteness of the so-called 'cure'. Such cases then become active carriers of the parasite.

As expected the original tablets modified by the addition of an inert wetting agent gave significant results ensuring approximately 67 per cent of the cases to be clinically and culturally declared as cured. However, after this initial cure the parasite generally returned, after a lapse of 2-3 weeks after stoppage of the treatment, whether the infection would attain its original peak after a lapse of, say, 6 months or more it would be interesting to find out with a follow-up of these cases.

Some workers are of the opinion that the infection may be spreading *via* fomites, like towels, toilet seats, swimming pools, etc. It is also likely that males are responsible for the recurrence of infection. Though the patients were advised against coitus, it is believed that serious attention was not paid to such requests. Further, there is a possibility of the reinfection of the vaginal walls *via* the urethra or Skenes glands where the parasites could hide for long periods without causing any symptoms.

In this series, a case of young widow, aged 30, who had suffered from this infection for over two years, could be cited. S.V.C. tablets, local application of gentian violet and vaginal douches were tried in several medical institutions other than J. J. Group of Hospitals. At one hospital, after six weeks of treatment the patient was pronounced to be cured. Weekly examinations after that did not reveal any return of the infection. Could one hope, therefore, that a cure from trichomonad infection is a distinct possibility in women, provided the male partner is also treated simultaneously? This aspect of the subject requires further investigation.

It becomes clear from the laboratory control employed in the treatment of the cases of vaginitis, that a clinical cure is not a complete cure. An inadequate treatment without having ascertained the cultural cure might result in healthy carriers. The facts ascertained in this study have been presented in order to invite attention to the vexatious therapeutic problems of vaginitis associated with presence of the *Trichomonas vaginalis*.

CANDIDA ALBICANS :

This fungus was isolated from 45 out of 100 cases. In all these cases, there was complaint of leucorrhoea, and presence of vaginitis. If the first 50 cases are compared with the second group of 50 in this study, the differences are not marked as in the cases of trichomonal vaginitis, and such as they are, they cannot be considered statistically significant. It would therefore appear that adding of an inert agent hardly made any difference to the monilia. In one-third of these 45 cases there was no response to treatment, either clinically or culturally.

Of the nineteen cases of non-trichomonal and non-candidal nature, ten (52·6 per cent) did not respond to the treatment. This was the lowest percentage of cure in this series. It is understandable, since the cause of vaginitis in these cases was undetermined.

Summary

One hundred cases of vaginitis from a large majority of whom, the *Trichomonas vaginalis* and the *Candida albicans* had been isolated, were treated by a combination of anti-trichomonal and fungicidal drugs topically.

Response to treatment and the nature of relief obtained have been reviewed. The role of the laboratory in assessing the efficacy of drugs and the true nature of the cure, have been brought out.

Addition of a wetting agent to the drugs employed topically in the treatment of trichomonal vaginitis seems to enhance the elimination of the parasite and consequently the response to the treatment.

Acknowledgment

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The drugs employed were kindly supplied by the Unichem Laboratories, Bombay.

PRACTITIONERS' SERIES

SOME ASPECTS OF SURGERY OF INGUINAL HERNIA BASED ON PERSONAL EXPERIENCE AND OBSERVATIONS

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Introduction

Sir Heneage Ogilvie remarked: "I know more than a hundred surgeons whom I would cheerfully allow to remove my gallbladder but only one whom I should like to expose my inguinal canal." That inguinal hernia is one of the commonest surgical affections is too well known. Statistics of incidence of this condition, computed by the author in two of the major teaching hospitals in Andhra Pradesh (namely, Osmania General Hospital, Hyderabad, and King George Hospital, Visakhapatnam) tally well with figures over the rest of the world. It is one of those common and readily undertaken operations not only in the teaching institutions but by the general surgical practitioner also. Most of these cases are operated by the young surgical apprentice at the hospitals. The importance of an accurate conception of anatomical details and the correct technique of operation is often not fully realised. Most often the approach to the problem of hernia is considered to be too minor an affair and this is unfortunate as obviously a great proportion of our patients are denied the best possible attention. These factors contribute to the postoperative morbidity and recurrences resulting from preventable causes. It is thus not out of place to recall the observation of Sir Astley Cooper who says: "No disease of the human body belonging to the province of the surgeon requires in its treatment a greater consideration of accurate anatomical knowledge with surgical skill than hernia in all its variations."

Another important point is that most of the recurrences following operations for hernia are undoubtedly due to faulty teachnique which can be rectified. It is worthwhile noting that Max Page has found that his recurrence rate in 1943 was 10 per cent as against 20·5 per cent in 1934. This was essentially due to changes in the concept and improved technique of operation.

With these considerations some important aspects of the surgery of inguinal hernia are discussed in the light of our observations over the

past 9 years and experiences with cases operated personally and some cases followed up for the past 5 years, as well as observations on cases operated upon by others.

Rationale of Operation

All cases of inguinal hernia are not alike. It is of utmost importance to use discretion in individual cases regarding the rationale of operative technique adopted. Broadly the cases of inguinal hernia can be grouped as:

1. Hernia in the child.
2. Hernia in the young adult whose musculature is absolutely healthy and strong.
3. Hernia in the middle aged or elderly patient with considerable weakness of the abdominal musculature.
4. Hernia in the aged people with poor and flabby abdominal musculature.

What is the rational type of operation to be adopted in each of the above groups?

As per the theory of Hamilton Russell which is universally accepted 98 per cent of all indirect inguinal herniae are due to the presence of unobliterated processus vaginalis providing a preformed sac. Thus in the case of a child the only abnormality existing is "the presence of a preformed sac" which is the cause of inguinal hernia. This is an important factor to be kept in mind while dealing with cases of inguinal herniae in children. Thus it is rational in these cases only to excise this abnormal sac and do nothing more. As the child grows up the obliquity of the inguinal canal will become established as also the normal strength of the musculature. Any attempt at repair of the inguinal canal by the introduction of sutures into the delicate muscles of the child is supposed to be an assault of the first order. This traumatises the muscles leading to their attenuation and recurrence of hernia. Thus 'herniotomy' alone will suffice in a child. Moreover, the superficial and the deep inguinal rings are more or less opposite to each other in the child. Hence to dissect and isolate the sac fully up to its neck, the canal need not be opened up. This can readily be done up to its very neck at the deep inguinal ring which lies next only to the superficial ring, unlike in the adult. Thus the inguinal canal in the child should not and need not be opened, and all that is needed is only herniotomy which can be easily done without opening the canal.

In the young patient, in whom the inguinal musculature is healthy and again the only abnormality leading to hernia is a patent processus vaginalis, the rational procedure would be herniotomy alone and nothing more. This is where the usual tendency occurs to carry out herniorrhaphy also in addition to the excision of the sac. In a young patient with healthy musculature, a herniorrhaphy is quite unnecessary and moreover the trauma of the healthy muscles leads to recurrence. The author has cases of young men between 17 and 22 years age being followed up for the past 6 years in whom only herniotomies were done and they were found absolutely healthy so far with no recurrence. Thus the procedure of doing only herniotomy in these young adults is both rational and justified. A few of them are doing quite strenuous jobs like hawking, serving in a hotel and performing the duties of a police constable. Repair of healthy muscles is not only unnecessary but also entails risk of recurrence.

It is in the middle aged or elderly patients in whom there is considerable weakness of the abdominal musculature that a repair of the defect in the inguinal region occasioned by the hernia is necessary in addition to the excision of the sac. Hence in these cases a herniorrhaphy in a necessity in addition to the excision of the sac.

In patients of advanced age and in those with poor and flabby musculature some sort of hernioplasty is necessary to strengthen the weak area effectively. Mere herniorrhaphy with the same poor musculature does not suffice.

Essential considerations—Once the rational operative procedure is decided upon in a given case and before the question of the actual operative technique comes in, certain essential considerations pertaining to the anatomy and procedure merit close attention.

First and foremost, one should be thoroughly conversant with the anatomy of the inguinal region. Often this is not well realised. The inguinal region in the living body, i.e., at operation, affords an excellent opportunity for appreciation of the different structures clearly. The best way of knowing is to observe and inquire while assisting a senior at operation rather than follow him mechanically. One may meet with occasional variations too. Of the things not sufficiently stressed in books, I would like to point about the deep inguinal ring. It is conventionally believed to be a transverse slit in the fascia transversalis. But Lytle in 1945 gave a new concept of the same. According to him the deep inguinal ring is a U-shapped sling-like muscle hanging from behind the lower border of the internal oblique muscle suspending the spermatic cord. When normal in size it contracts during strenuous movements of the abdominal wall and prevents herniation, but becomes incompetent when stretched due to hernia-

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tion. On this fact depends the special attention necessary to repair the deep ring when it is considerably dilated and incompetent. At operation the deep inguinal ring should be recognised and narrowed when unduly dilated, for proper protection against recurrence. This according to many is a very important procedure. Those who have not paid any special attention, as Lytle writes, might have unwittingly twisted it along with the neck of the sac and included in the transfixing ligature.

Meticulous care about the technical details is very essential for the success of the operation. Much messing up at operation usually occurs due to lack of proper appreciation of the anatomy and leads to complications such as haematoma, infection, consequent morbidity and even recurrence.

Operative Technique

Incision—It would be certainly nice if an incision is made along the inguinal crease (more or less transverse). The oblique (or even nearly vertical) incision usually chosen leaves rather an unsightly scar, compared with the crease incision. But sometimes the crease incision causes difficulty in exposing the whole extent of the inguinal canal (especially by the early surgical apprentice). Anyway, ideally the incision should overlie both the rings and afford exposure of the entire canal enabling a satisfactory repair.

Summary of routine procedure—After incising the skin and fasciae, ligature of the vessels in the superficial fasciae must be thorough. The external oblique aponeurosis is divided in the line of its fibres or between the separated fibres, when separation is noticed. The flaps of the external oblique are reflected separating the lax tissue between it and the internal oblique (by finger dissection). The lower border of the internal oblique and medially the conjoint tendon are well defined. When the lower flap is reflected the grooved surface of the inguinal ligament is defined. The cremaster issuing from the lower border of the internal oblique (covering the spermatic cord) is recognised, picked up in haemostats, divided and its flaps reflected to see the sac (in indirect inguinal hernia). It is seen as white and glistening with its border. The structures of the spermatic cord may lie behind and may not be seen at this stage. Identification, isolation and excision of the sac are proceeded with and finally the repair, when desired, is carried out by suturing the internal oblique and conjoint tendon above to the Poupart's ligament below, but behind the spermatic cord (as detailed later). The skin wound is closed after a few subcutaneous stitches are applied.

Significant technical details—We shall now discuss about certain essential details conducive to an efficient and successful operation. The names associated with the various techniques are legion. Whatever technique is adopted it is essential that certain details must be followed accurately. In order to obtain the best results and prevent recurrences the first opportunity is the best and it is at this that all care is to be evinced. Most of the recurrences are often due to faulty technique and with proper understanding and care these can be avoided.

The inguinal canal must be well laid open in its entire extent. Often either the medial or the lateral end or both are not well exposed and this precludes a satisfactory repair. The great objection to the original Bassini operation is that only the middle part of the canal is repaired and no attention is paid to the medial and lateral ends. This is one of the most potent cause for its disrepute. At the medial end the superficial ring should be divided and medial end of the canal exposed well up to the pubic tubercle. The ilioinguinal nerve must be protected out of harm's way.

The contents of the hernia unless irreducible, due to adhesions, are to be reduced if no spontaneous reduction has occurred under anaesthesia.

While dissecting the sac, first, one should proceed towards the fundus. Quite often this may extend into the scrotum also, in the congenital type occurring in the adult. Should this be so, the testis could be brought out through the operative wound and the distal sac pursued. If the sac is continuous with the tunica vaginalis, then it is divided across at the upper pole of the testis, the distal cut end is closed and the proximal part freed and traced towards its neck.

Another very essential point is that the sac should be completely dissected right up to its neck. The neck is recognised by the narrowness of the region, fibrous thickening or the extraperitoneal collar of fat. The neck is almost always covered by the internal oblique and cannot be properly exposed unless the internal oblique is well retracted. This point is too often missed and it is not uncommon to see many a junior surgical apprentice dividing the sac at the lower border of the internal oblique, thinking that the uppermost limit of the sac has been reached. It must be realised that this incomplete division of the sac is another very common cause of recurrence. Hence the need to stress this point strongly.

Those who perform a number of these operations know that the dissection near the neck calls for a careful approach to free the neck from the internal spermatic fascia issuing from the deep

inguinal ring and merging with the outer wall of the sac. Also in herniae of considerable size the urinary bladder in its medial relation is not infrequently adherent and is to be carefully dissected and separated.

If the isolation of the sac proceeds satisfactorily there is no need to open the sac early. If for reasons of adhesions inside or outside, the sac needs opening up early, one can introduce the left forefinger inside the sac for support and free the wall by dissection externally.

The spermatic cord may be very firmly adherent to the posterior surface of the sac and may entail a tedious dissection. Care is necessary to avoid injury to the vas which may be meandering through the adhesions, as also to the veins of the cord lest a haematoma may occur. Prompt haemostasis is necessary should the veins be cut.

We view with great disfavour indiscriminate orchidectomy done as a prophylactic measure against the recurrence of hernia. In old people where effective repair could only be achieved by orchidectomy, the operation can be done, but not as a routine.

When firm adhesions are noticed between the intestines and the inner wall of the sac, it is better to cut a portion of the sac around the gut and let it go in, rather than attempt separation which may cause perforation of the gut.

When in doubt one can verify whether a given case is a direct or indirect inguinal hernia from the relation of the neck of the sac to the inferior epigastric vessels.

Repair of deep inguinal ring—In indirect inguinal hernia of considerable size it is necessary to repair the deep inguinal ring. The identification of this ring is not a myth as is considered by some. Some operators pay particular attention to identify the ring and repair it. After the ligature and excision of the sac, if the forefinger is introduced, pushing the stump deeper, one would be able to recognise the deep inguinal ring better by palpation at first rather than by seeing it. Later the edge of this ring can be held up in haemostats and demonstrated. On a number of occasions we have defined and sutured it by Lytle's technique. We have also taken some photographs of the deep ring at operation to substantiate the scope of its repair. The plastic repair of the deep ring adds to the efficacy of the technique, but if it is not repaired it is a potential site of recurrence.

Suture material for herniorrhaphy—Whether to choose absorbable or non-absorbable suture material had been a moot question. Non-absorbable suture material specially silk and sometimes braided nylon are widely used. Linen, because of its cheapness and ready availability, is also used by some. When these are used, especially linen, great care must be exercised in the sterilisation of the material, lest extrusion and sinuses result due to lurking infection. Silver wire, steel wire, kangaroo tendon, etc., are of historic importance now, except when the modern steel mesh is specially used for wide defects.

Laying the sutures—It is not just enough if merely 2 or 3 sutures of catgut are applied to cover the middle of the canal as is often done. Well over 6 or 7 sutures must be evenly placed. They must extend up to the lateralmost and medialmost ends of the canal. The medialmost one must include the pubic periosteum and the lateralmost pass to the outer side of the deep inguinal ring. The sutures must be laid perpendicularly to the long axis of the canal, in other words to that of Poupart's ligament. No suture is tied until all have been placed in position. If, non-absorbable suture material like silk or linen is used (as continuous suture) the same principle of covering the entire extent of the canal (by darning or lattice work) is of paramount importance, not merely covering the middle of the canal.

It is not so much the tightening of these sutures that matters. In fact too much tightening is to be avoided. Only approximation, without tension whatsoever, is all that is necessary. Fibrous tissue fills up the interstices of the lattice work and affords strength to the defective area. That is why the silk lattice is preferred.

Next, we would like to mention about the Willys Andrew's technique which is not infrequently adopted. Many a time this is thought to be accomplished by merely double-breasting the flaps of the external oblique aponeurosis. This affords strength only to the anterior wall. It is to be noted that this can only be an additional measure if already an efficient repair of the posterior wall is done and not otherwise. Here it may be appropriate to recall the wonderful remark of Gallie: "The time which is spent in preventing a hernia from getting out of the canal is much better spent in preventing it from getting into it." Hence the correct procedure to be adopted is what is called the Willys Andrews' imbrication method. This comprises in suturing the upper flap of the external oblique, the internal oblique and conjoint tendon to the Poupart's ligament behind the spermatic cord and overlapping and suturing the lower aponeurotic flap to its front, the spermatic cord lying in between. This imbrication method is imperative when one says he is employing the Willys Andrews' technique. If not, at least the posterior wall should be well repaired by suturing at least the internal oblique and the conjoint tendon to the Poupart's ligament (in the way des-

cribed) and then double-breasting the aponeurotic flaps in front of the cord to strengthen the anterior wall.

When these points are realised, the Willys Andrews' technique is commendable indeed.

Another important one is Macvay's operation. This has been a significant contribution to the inguinal herniorrhaphy since 1949. The essential feature of this operation is the utilisation of the Cooper's ligament to which the transversalis fascia and conjoint tendon are sutured. Macvay ignores the inguinal ligament and makes use of the Cooper's ligament instead, commencing at the pubic tubercle and extending as far as the femoral vein laterally crossing from above.

This is an admirable operation which affords the best support to the inguinal region preventing direct herniation which is often the type that occurs after repairing an indirect inguinal hernia. But the operator should be well conversant with the technique of hernia surgery in general and the structures of the inguinal region, which means considerable experience.

Hernioplasty—In aged people with poor musculature hernioplasty is advocated by using living suture material in place of catgut or silk. The operation is done by making an incision in the thigh separately and cutting out long strips of fascia lata (12″), which after being threaded to the thick larged-eyed Gallies' fascial needle and fastened, are used as suture material for the repair. The advantage claimed is that fascia being a living suture material will get ingrained well into the tissues of the host and will become part and parcel of it, affording a dense and efficient sheet of fibrous tissue growth protecting the area of the defect. The operation takes a longer time in the old patient. The double operative site is imperative. General anaesthesia entails pulmonary complications. These operations are somehow becoming rarer in our institutions. Provided one can afford to bestow the time and energy, there is no reason why these could not be done, even less frequently. A few cases which we treated or assisted, yielded good results. But the disadvantages involved probably could be a ground for other methods of Willys Andrews imbrication technique or repairs by the use of stainless steel or tantalum mesh, etc.

However, the operations employing silk, linen, tantalum, steel mesh, etc., also should rightly be called as hernioplasties only but employing non-living suture material.

There are a host of other names associated with the techniques in the surgery of inguinal hernia. But one should not be enticed away by them. What is more important is to understand the rationale of appropriate operative techniques in a given case—having a few of the common and well understood procedures as the basis and to work up with modifications where feasible rather than to be lured away by the names. Other recent methods of importance are:

1. Patey's hinged flap from the rectus sheath (1949).

2. Silver filigree inlays (Cole, 1941; Leedman, 1949) and by other more recently introduced.

3. Mair's skin transplants (1940 onwards) which had been widely tried by May (1948), Codoff (1949), Green (1949), Strahan (1951); but the considerable sepsis, cyst formation and other disadvantages outweigh its advantages according to Munro (1951). Anyway these skin transplant repairs are not popular in the teaching institutions where we worked for the past 9 years.

4. Repair by implantation of tantalum gauze, as advocated by Throck-Morton (1948) and Burnell (1954), is another recent innovation. The tantalum mesh is cut to the shape and size of the defect of the inguinal region and its edge sutured to the gap by fine steel wire supplied with the mesh. Good results are reported, but for routine purposes, it is difficult to obtain tantalum mesh freely and therefore at least in busy clinics this may not be practicable.

Instead, stainless steel mesh is advisable. Even this is supplied sporadically by certain firms in India. It is also a very good material for the repair of hernia with wide defects. The steel mesh is quite pliable and resilient enough to move during the respiratory movements of the abdominal wall.

It is surprising how inextricably firm a union will occur between the stainless steel mesh and the surrounding tissues of the host, within the course of a couple of months. Contrary to the general apprehensions, the repair by the steel mesh is quite good and practicable, subject of course to its availability. But the factor of cost is also there even for the steel mesh (each piece costing about Rs. 75). This mesh is not only advised for wide defects of inguinal hernia but for ventral hernia and lumbar and incisional herniae too.

It is also interesting to note that Seymour G. Pelzer (1958) of Bristol presented a new approach to the repair of indirect inguinal hernia, i.e., from within the abdomen, either by a low paramedian or high oblique inguinal incision. We have no personal experience of this nor have I seen one being done.

Postoperative management—The postoperative care is routine—sutures being removed on the 7th day. During the postoperative period a suspensory scrotal bandage must be applied lest traction occur on the cord and lead to discomfort and haematoma.

After removal of the sutures, strapping the area with 2-inch wide straps of sticking plaster over a single layer of gauze over the healed incision will give great comfort to the patient, as it will support the tender tissues and will enable the patient to undertake light walking very comfortably after discharge on the 10th day.

Summary

Inguinal hernia is a common surgical condition the operations for which are readily undertaken both at the public institutions as well as by the private general surgical practitioners. As such many of the important factors concerning its various surgical aspects are taken up for discussion.

Practical problems with regard to the rationale behind the adoption of certain procedures in a given case have been discussed.

The important technical aspects of certain commonplace procedures have been detailed in the light of personal experience and observations.

A brief review of the more recent operative procedures adopted in the hernia surgery department is given.

SPECIAL ARTICLES

SOCIOLOGY : ITS IMPORTANCE TO MEDICAL STUDENTS AND GENERAL PRACTITIONERS

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Introduction

Sociology is one of the human biosocial or behavioural sciences which deals with social relationships of man with his fellow human beings. The network of social relationships we call society. The word 'sociology' is derived from Latin *socio* (for society) and Greek *logos* (study) ; while the word 'society' itself is derived from the associated Latin words *socius* (individual), and *societas* (group). Hence society represents a group of individuals, and sociology deals with the individuals in a society. We have to study both individuals as well as groups in a society. Although individuals make the groups, the group behaviour is often different from individual behaviour ; hence our interest lies mainly in the behavioural sciences. Again, the term social medicine is made up of the two words society and medicine ; and hence our obvious interest in the study of society. Further, the words social and economic are inter-related, and often we combine the two and call it socio-economic—the two components being more easily separated in the higher social groups, while in the lower they tend to be mixed up ; while in the lowest social groups living on the bare minimum standards of life under subsistence economy, the social component is submerged by the economic factors which challenge their very existence in life and living conditions. Sociologists are, therefore, interested in social relationships of various patterns—social, economic, cultural, political and religious, as there is considerable overlapping between these which constitute the diverse motifs and structures of different societies. The life of man is many-sided and the combination of these facets constitute the differences between individuals as much as groups and the groups that form the society. Hence the study of man is our subject in behavioural sciences, either as individuals or in groups.

Aims and Objectives of Sociology

Sociology aims at studies in human relationship for the betterment of individuals in relation to society. As individuals differ in their behaviour, outlook and human values of life, the groups differ much more ; and the larger group or society is never static but is dynamic to the extreme, because life is a continuous and continued alteration and adaptation to ever-changing environments. This is called study of group dynamics.

Social medicine is the study of man in his environment to give him life, and that abundantly. The lowest socio-economic groups are often denied even the 'right to live' apart from 'living well'. This is the philosophy behind Community Development programmes today—to give the rural masses the joy and pleasures of life as individuals, and as partners in a society or community, and social educational organisers in the relevant organisations pave the way before instituting development programmes in order to make improvements acceptable to the people for whom they are intended.

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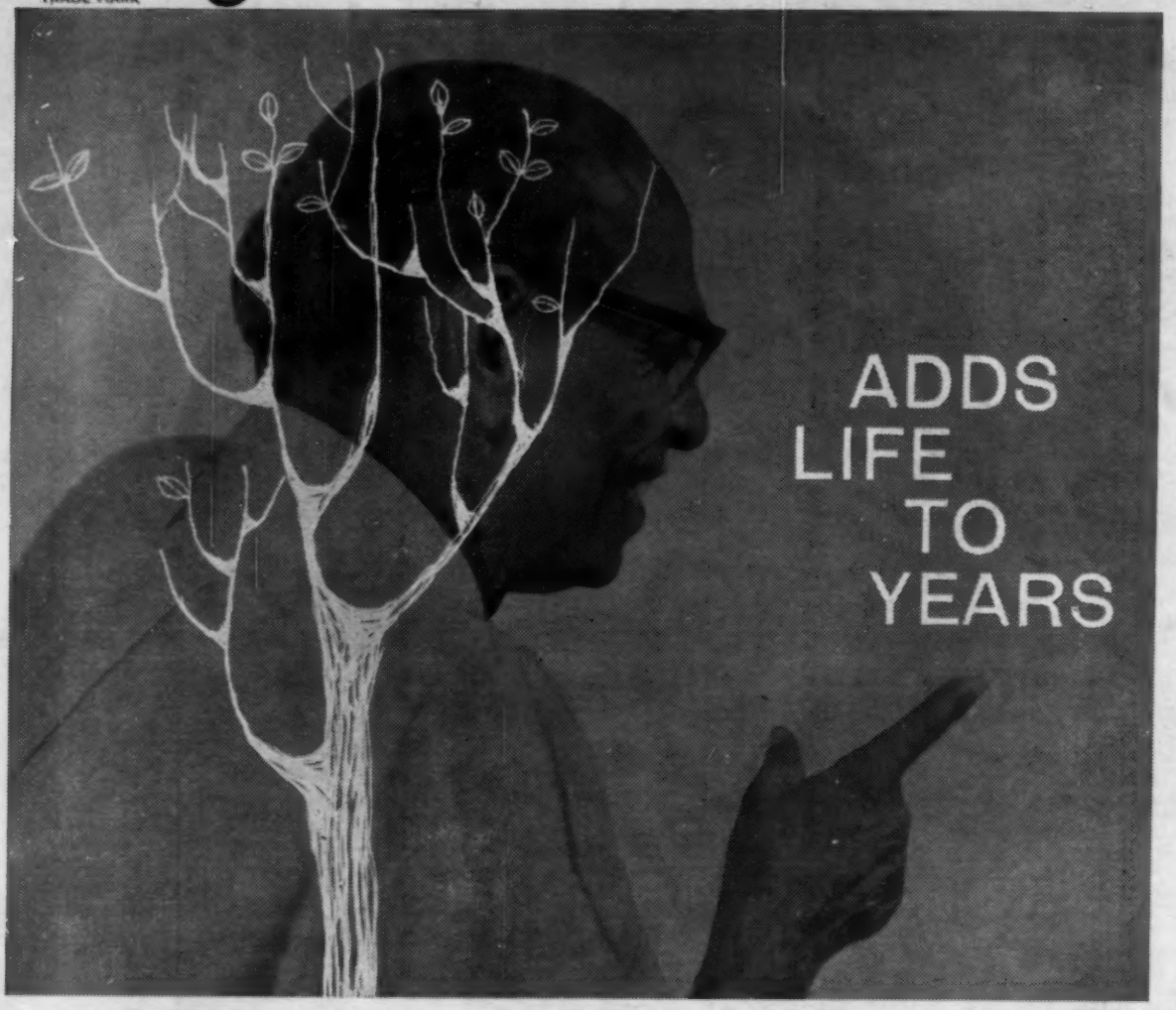

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An individual reacts on society and *vice versa*. There is always a continuous interchange of relationships between man and man, and in turn man and his groups which comprise society. This awareness of relationship is significant as patients depend on their family ; and the treatment of the environmental factors, which is called social engineering, to clean up social pathological factors. This comprises study of social pathology. Many diseases are caused by environmental factors, and as they originate there in the prepathogenic period patients treated in hospitals and sent back to the same environment get relapses and complications again and again. We have to 'sanitate the environment'. The patient's disease may be delayed, modified or interrupted because of adverse factors in his family or his environment, in addition to physical and biological, psychological and socio-economic factors. Hence, the importance of sociology in medicine, particularly of social medicine which is necessary for all medical students, as much as general practitioners, who should practise not only the science but also the art of medicine.

Normal Growth and Development : Individuals and Groups

Any individual has two lines of growth —development or social. The developmental growth is traced from the infant through toddler, child and adolescent to adult, while the social growth starts from the family to society, panchayat, municipality, State Government to Central Government. As the family is the smallest unit in the developmental side, the panchayat which is formed by several families in a village coming together for their mutual benefit, is the smallest unit of organised civic life. Just as the individual reacts to the family group in any organised society, it is obvious, that a man should fit himself into both the family group as well as the panchayat group, so that he may be well balanced in his social behaviour. This has brought into focus the concept of positive health, as made up of physical, mental and social health, and not merely the negation of disease. Again, this satisfies the concept of social medicine which comprises the study of man in his total environment, physical, biological, psychological and socio-economic. Such an approach leads itself to the study of total disease in the total man in his total environment. This has brought out the need to study the patient with the disease and, not merely the disease in a patient—study of the patient in his natural environment of his family ; integrating both preventive and curative medicine into comprehensive medicine—internal medicine with external medicine making total medicine. In social medicine, therefore, the focus of our study is not individuals, but the family as the smallest social unit of society (Dakshinamurthy, 1960). Medicine is an applied biological science, a social science whose problems are much more sociological than biological.

The Anatomy of Society

In the primitive days man belonged to a tribe and not to a family ; and the tribal or herd instinct was more pronounced than family attachments. In an organised society, the family is the smallest unit of both developmental and social growth, and so it is our unit for study in social medicine in both health and disease. How often does curative medicine, which is confined to individual patients, neglect the family doctor plan—the simple fact that patients have families. The family lives in a house of its own, has integrated socio-economic existence, with cultural and religious ties ; and has a common family doctor who combines preventive with curative medicine. With the full background of total environment he is able to see cases in the prepathogenic period, as well as in the pathogenic period—the sub-clinical and clinical phases of diseases, in order to give radical cure and preventing relapses, sequelae and complications. In the social field, the panchayat is the smallest unit with cultural, political and religious ties, as well as in the economic field with a co-operative society of which every family joins as a member. This is the picture of an organised family in an organised panchayat ; and developing to full stature both physically, mentally, socially, culturally, economically and religiously. This gives full emotional integration to the entire society.

The Physiology and Pathology of Society

Man is the subject of study as an individual both in the developmental as well as in social fields ; a harmonious combination of both is provided by proper environmental factors. Any adverse condition in the environment reacts on the man's total make-up, causing derangement in physical, mental or social health. It may cause deterioration in physical health which manifests itself in disease ; in mental health causing personality disorders, or social health causing social diseases. In many families who live in the urban slums today such social factors are evident in the extreme ; many economic factors of diseases due to filth are caused by bad environmental sanitation, and mental disorders arising from

socio-economic factors which make them social outcast or even criminals. Social scientists working in close collaboration with biologists, can improve the entire situation. The concept of social engineering is designed to correct and modify their entire life and living standards.

Social Education

Culture is defined as the outlook on life, the philosophy of existence, and the human values of living. An educated person today should advance as much in knowledge as in culture, so that the cultural patterns of life are improved. Children born to parents with any particular culture, imbibe these patterns naturally and those born in slums living amidst physical and moral filth have no cultural heritage and take no cognisance of human values of life. Thus social education organisers are employed in Community Development Blocks to inculcate the concepts of well-bred families and cultural standards of life and living. Simple and low living with high thinking is the characteristic of a cultured person ; while high living and no thinking are the philosophy of a non-cultured person. Unfortunately people have stopped thinking today with the result that they have no plan or objectives in life !

The Pattern and Structure of Family and Community (Urban and Rural)

Just as the family is the basic unit of society, the community is the geographical unit in society. However, as the patterns of society in the urban and rural areas change, the outlook of the community changes correspondingly in town and village life. This requires due consideration in organisation of co-operative societies for commuity action, community health services, community education, etc., in both urban and rural areas, as is being done in Community Development organisations. As the social patterns in a city which consists mostly of industrial and office workers change from those of village with simple agricultural and other local occupations ; so do their interests in life, mode of living and interrelationships with fellow members of the community. In the rural areas we have fairly homogenous groups : what affects one family affects all others ; while in the cities the families live in their own 'cells' without any interest in their neighbours. Thus social organisations must differ in the village and towns—a panchayat for the former and municipality for the latter. The village life is uni-faceted, while town life is multi-faceted ; and so in the latter there is less harmony among the groups ; and is more difficult to study for the social scientists. This is the objective in field training programmes for all medical, health and para-medical personnel to study the patterns in urban and rural areas to meet their different health problems.

Society and Biology

It is obvious that any disharmony between society and biological factors in which people live will tend to produce disease. In the higher social groups that have a sound economical base, this may be reflected in unhygienic habits, e.g., over-eating and over-sleeping, excessive drinking, smoking, etc., while in the lower social groups it starts with economic stress and runs to physical, mental and social strains and stresses. For example, mental diseases are much higher in the higher social groups than in the lower ; and to a large extent in the well developed than underdeveloped countries—showing that social and economic factors are to a greater extent responsible for mental disorders, just as economic factors underline physical disease. In U.S.A. and U.K. today, half of the hospital beds are occupied by mental patients whose trends for the past 15 years are on the increase ; while physical diseases are going down with increase in their expectation of life, in an unageing population. This does not, however, mean that half the general population of these countries are mentally diseased, nor that the degree of their mental condition is of such a nature as to require hospitalisation, as there are several other factors associated with it, for hospital patients are a very selected sample of the general population. But it does mean that there is an increasing clash between society and biology which requires investigation for this large increase of mental diseases, which is loosely termed as due to 'stress syndrome'. In any case, these strains and stresses require close study for instituting measures to correct them. So far nothing has been done to study this anywhere in the world.

Developed and Underdeveloped Countries

The chief diseases in the developed and underdeveloped countries, in order of priorities, are :

(1) *In developed countries* : (a) Metabolic diseases like heart disease and hypertension and kidney diseases. All of them are non-communicable diseases. (b) Malignant diseases which are degenerative diseases of old age. (c) Mental diseases due to clash between biology and society.

(2) *In underdeveloped countries* : (a) Mass diseases—Chronic or endemic socio-economic diseases : malaria, tuberculosis, leprosy and venereal

diseases; complicated by degenerating diseases like diabetes and hypertension. (b) Filth diseases and nutritional diseases such as helminthic diseases and under- and malnutrition causing great morbidity and high case mortality. (c) Infectious diseases particularly among infants and mothers. Thus, the patterns of diseases, their priorities and importance change with the patterns and structure of society both in time and place, in recent years: due to changes brought about after World War II, and this has affected differently the developed and underdeveloped countries due to different socio-economic factors. Thus the per capita income per week varies from $1 to $2 towards $10 to $20 as we go up the scale in developed countries; in India it is about Rs. 5 per capita per week today, which works to about Rs. 250 per capita per annum. The impact of this low economic condition in addition to social conditions requires the help of social scientists, as much as of biologists in improving the health of our rural masses.

Summary

All medical, health and para-medical personnel, particularly those working in underdeveloped countries require knowledge of behavioural sciences, viz., sociology, human ecology, social anthropology and social psychiatry, etc. The reason lies in the fact that most of our health problems are as much sociological as biological; and the impact of one on the other pushes the people in the spectrum of health to disease towards the disease end. Sociology is the basic behavioural science, as without its understanding other behavioural sciences cannot be grasped.

Reference

Dakshinamurthy, S.—*J. Indian M. A.*, **35**: 366, 1960.

FIBRINOLYSIN (PLASMIN)

ADUSUMALLI CHAKRAVARTY, B.SC., B.M. (MUN.), M.D. (GER.), D.T.M. (GER.)

Gudivada

Despite recent advances in the diagnostic and therapeutic techniques, arterial and venous thromboses remain a major cause of morbidity and mortality. Except for a few vascular diseases such as varicose veins and aneurysm that lend themselves to surgery, the present therapy rests on the use of anticoagulants such as heparin and coumarins whose function is the prevention of further thrombotic complications (Wright, 1953). The ultimate therapeutic approach to this group of disorders, which passes as their common denominator the intravascular formation of fibrin, lies in the removal of the thrombus, the prevention of recurrence of thrombosis, and the prevention of embolisation or extension of the thrombus (Astrup, 1956).

Fibrinolytic Agents

In recent years, attention has been directed towards a class of substances grouped together under the general designation of thrombolytic agents. These compounds share the ability to promote the dissolution of the fibrin network upon which a thrombus is constructed, and thus are capable of dissolving the thrombotic material.

Streptokinase was the first of these agents to attract attention. It was first demonstrated by Tillet and Garner (1933), quoted by Beggs and Macfarlane (1953), in the filtrates of cultures of betahaemolytic streptococci. This agent has no direct action on fibrin but functions as an activator of the plasma proenzyme profibrinolysin (Mullertz, 1957). The effect of streptokinase, therefore, is dependent on the presence and concentration of plasma profibrinolysin. Inhibitors of streptokinase are present in a significant portion of the population, and the presence of these anti-steptokinase factors in the plasma not only increases the risk of allergic reaction but also tends to limit the fibrinolytic activity achieved by streptokianase infusions. Because of allergic and inhibitory phenomena, the therapeutic value of this agent becomes subject to question (Moser, 1958).

Proteolytic agents (*trypsin*)—Potent proteolytic enzymes such as trypsin and chymotrypsin have been administered to patients with thrombotic vascular obstructions (Innerfield, 1954). These agents lyse fibrin directly and are activators of profibrinolysin. Their systemic use has proved to be hazardous because of sensitisation to foreign protein, severe side-reactions and the need for administration of such dosages to produce such therapeutic levels for lyses that depression of components of the coagulation system ensues (Beck *et al*, 1956; Ambrus and Bird, 1957).

Fibrinolysin—Because of the limitation of streptokinase and trypsin, interest became centered on fibrinolysin itself. Fibrinolysin is a proteolytic enzyme, active at a neutral pH and is formed from profibrinolysin, a plasma protein precursor (Fletcher and Smith, 1958). It has a molecular weight of 108,000 and on analysis of its amino acid content, it has been found to contain 41 residues

of tyrosine (6·4 per cent) and 23 of tryptophan (3·6 per cent). The nitrogen content of these proteins are within the normal range (Shulman and Jacob, 1958).

Fibrinolysin possesses the special characteristic of being strongly bound to fibrin having 'selective substrate affinity' (Fearnely and Tweed, 1953 ; Sherry *et al*, 1957). This specificity of attack appears related to the fact that fibrin actually absorbs fibrinolysin and is hydrolysed into smaller soluble fragments (Phillips and Lawrence, 1950). These qualities allow this agent to achieve satisfactory intravascular fibrinolytic activity without disturbance of the coagulation mechanism (Beggs and Macfarlane, 1953).

Large amounts of fibrinolysin are not normally present in blood. Anxiety, exertion, and strong emotion have been known to give rise to spontaneous fibrinolytic activity (Astrup, 1956). This type of action can occur pathologically in sufficient degree to result in haemorrhagic diathesis ; and this has occurred following pulmonary surgery, obstetrical complications and in the presence of certain tumours (Norman, 1958).

Function and Formation of Fibrinolysin

The normal physiological function of this enzyme is believed to be the lysis of minor fibrin deposits that result from the trauma following normal activity (Singher, 1959). When tissues are damaged thromboplastin is liberated and the complex mechanism of clotting, leading to fibrin deposition is initiated. Profibrinolysin activators are also released at the injured site, the circulating profibrinolysin, a normal constituent of plasma, is activated on the fibrin surface, and the fibrin acting to protect the active fibrinolysin from the plasma inhibitors. Once activated the fibrinolysin at the site of the clot continues its lytic action until the clot is digested and only after lysis is the enzyme inactivated by the two inhibitors found in normal plasma (von Kaulla, 1958). Profibrinolysin activators are found in tissues and various secretions (urine, tear, milk, saliva and seminal fluid). *In vitro* studies have shown that bacterial extracts like streptokinase staphylokinase as well as a fungal extract will also induce the activation of profibrinolysin. Chemical materials such as chloroform will also bring about this change (Sokal *et al*, 1958).

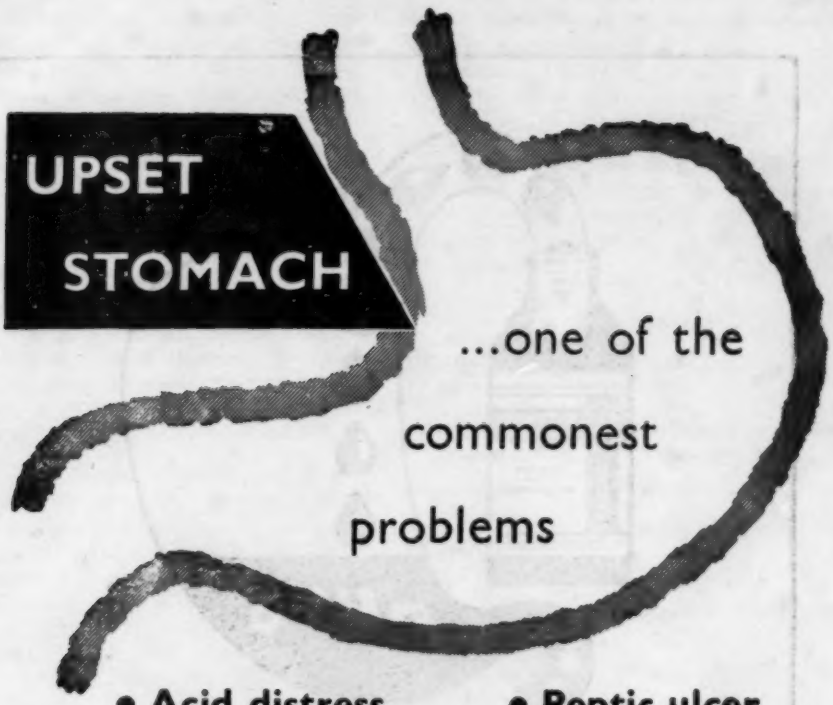
Production of therapeutic levels—There are three pathways open for producing therapeutic levels of fibrinolytic activity, viz., (a) intravenous administration of the activated enzyme, fibrinolysin ; (b) administration of an activator such as streptokinase, and (c) the injection of a lipopolysaccharide which may induce the release of naturally occurring activators (Ludecke, 1958). The lipopolysaccharides produce a febrile reaction in the majority of the patients treated, limiting their usefulness.

Moser (1958) using profibrinolysin, activated to fibrinolysin with small amounts of purified streptokinase after which the residual streptokinase was removed, on 52 patients with various forms of thromboembolic disease found that the intensity and duration of thrombolytic activity was a function of the fibrinolytic dosage. At levels of 69,000 F. units (one fibrinolytic unit of fibrinolysin is defined as that amount of a standard preparation which will change the turbidity of a standard fibrinogen thrombin clot by 50 per cent in 10 minutes) or more, high degrees of lytic activity is usually present for six to eight hours, the peak occurring about the third hour, and considerable activity frequently persists for twenty-four hours (Moser, 1958).

Time interval—Sokal *et al* (1958) showed that when the time interval between formation of the clot and administration of fibrinolysin was seventy-two hours or less, complete resolution was obtained within seven days in five out of eight cases of deep thrombophlebitis with marked improvement in another.

Clots three or more days old showed only partial or no lysis (Frey, 1958). In contrast, clinical research in Ortho Laboratory on 132 patients demonstrated excellent results in 62 per cent of cases of clots older than five days, with 24 per cent good and 14 per cent poor results. They concluded that treatment should begin as soon as possible or within three to five days of the thrombotic or embolic onset.

Toxicity—The degree of toxicity varies with the preparation of fibrinolysin used. Purified streptokinase activated fibrinolysin was antigenic with the production of anti-streptokinase antibodies. Urokinase activated fibrinolysin does not produce antibodies. Spontaneous activated human fibrinolysin or chloroform activated bovine form are non-toxic but are less effective (Ambrus, 1957). Moser (1958) in his series of 52 cases noted that 49·2 per cent had a temperature elevation of 1°F. or more beginning six to eight hours after infusion, reaching a peak of 2°·9F (1·0—5·2) at ten hours and declining to normal within the next ten hours. The febrile response did not correlate regarding the incidence or degree with the size of fibrinolysin dosage or amount of fibrinolytic activity achieved in the plasma. The incidence of fever was significantly higher among those patients in whom extensive thrombotic material



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was presumed to exist. This febrile response could be prevented or markedly ameliorated by the use of aspirin-antihistamine preparations. Out of the 52 cases only 2 had allergic reactions seventy-two hours after infusion. One was characterised by erythema at the site of infusion, and the other by a generalised urticaria. Both responded well to local and antihistaminic measures. In the majority of cases a fall in fibrinogen level was noted in three to six hours after infusion. The fall was small and no tendency towards a greater loss of coagulation factors was noted as the fibrinolysin dosage increased.

Two cases developed ECG abnormalities. One patient developed atrial fibrillation fourteen hours after infusion, and the other transient T wave change eight hours after infusion. In both cases changes occurred near the peak of a significant febrile change (Moser, 1958).

Effectiveness—The most recently published study using fibrinolysin prepared by streptokinase activated profibrinolysin showed in 171 cases of venous thrombosis excellent results in 65 per cent, good in 26 per cent and poor in 9 per cent. In this series embolisation occurred three times, and only once during fibrinolysin infusion. In all cases the clinical, ECG and x-ray changes reverted to the original state on initiation or continuation of therapy.

In 33 cases of pulmonary embolism excellent results were achieved in 70 per cent, questionable in 24 per cent and poor in 6 per cent. In those cases where treatment was instituted less than five days after onset of the condition excellent results were achieved in 91 per cent, questionable in 9 per cent (Sokal *et al*, 1958).

Of the 14 cases of cerebral artery occlusion, four were seen within 24 hours of onset and the remainder had neurological deficit stable for at least a period of three days. Improvement was noted in seven cases within 24 hours, with no improvement in the remainder in the same period of time (Moser, 1958).

Fibrinolysin has also been used in carotid artery occlusion, mesenteric thrombosis, coronary occlusion, retinal artery occlusion, endartectomy with varying results (Sokal *et al*, 1958).

Anticoagulants—Fibrinolysin cannot prevent the initiation of thrombus formation. Therefore in a large percentage of cases anticoagulants must be used simultaneously or following the infusion of the enzyme. The concurrent use of anticoagulants does not interfere with effectivity or induce haemorrhagic phenomena (Sokal *et al*, 1958).

Contraindication—The use of fibrinolysin, at present, is not recommended in any major haemorrhagic diathesis, major liver dysfunction or in hypofibrinogenaemia.

Summary

Of the fibrinolytic agents, fibrinolysin appears to be the most suitable for therapeutic use in such conditions as phlebothrombosis and pulmonary embolism because of its specificity of action and low toxicity.

References

Ambrus, J. L. and Bird, F.—*N. Y. Acad Sc.*, **68**: 97, 1957.

Astrup, T.—International Conference on Thrombosis and Embolism, 1956, Benno Schwabe & Co., Basel.

Idem—Lancet, **2**: 565, 1956.

Beck, N., Oliver, J. and Smith, H.—*Circulation*, **4**: 440, 1956.

Beggs, G. R. and Macfarlane, R. G.—Human Blood Coagulation, 1953, Springfield Publication, Springfield, Mass.

Fearnely, G. R. and Tweed, J. M.—*Clin. Sc.*, **12**: 81, 1953.

Fletcher, A. P. and Smith, V. R.—*J. Biochem.*, **233**: 86, 1958.

Frey, K.—Clinical Trials of Plasmin. Paper presented at 18th Congress otf Surgeons, Munich, 1958.

Innerfield, I.—*J. A. M. A.*, **156**: 1056, 1954.

Ludecke, H.—Paper presented at the 18th Congress of Surgeons, Munich, 1958.

Moser, K. M.—*J. A. M. A.*, **167**: 1695, 1958.

Mullertz, S.—*Ann. N. Y. Acad. Sc.*, **68**: 38, 1957.

Norman, S. P.—*J. Exper. Med.*, **108**: 53, 1958.

Phillips, R. and Lawrence, J.—*J. Clin. Invest.*, **37**: 965, 1950.

Sherry, S., *et al*—*N. Y. Acad. Sc.*, **68**: 52, 1957.

Shulman, S. and Jacob, P.—*J. Biol. Chem.*, **233**: 91, 1958.

Singher, H. O.—*Clin. Med.*, **6**: 961, 1959.

Sokal, J. E., *et al*—*J. A. M. A.*, **168**: 1314, 1958.

Tillet, F. R. and Garner, J.—Quoted by Beggs, G. R. and Macfarlane, R. G. (1953).

von Kaulla, K. N.—*Circulation*, **17**: 187, 1958.

Wright, I. S.—*Am. J. Med.*, **14**: 720, 1953.

SHWASA ROGA AND ITS TREATMENT IN AYURVEDA

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The human body according to Ayurveda is composed of three fundamental elements called *dosha, dhatu* and *mala*. The *doshas*[1] govern the physicochemical and physiological activities of the body[2], while the *dhatus* enter into the formation of a basic structure of a body cell[3], thereby exerting some specific actions[4]. The *malas* are substances which are partly utilised in the body and partly excreted in modified forms after subserving their physiological functions[5]. These three elements are said to be in a dynamic equilibrium with each other for the maintenance of health. Any imbalance of their relative preponderance in the body results in disease and decay[6].

All the diseases, according to their *udbhavasthana* are divided into two groups[7]. One group of diseases is said to arise by the formation of *ama* due to improper digestion of food in the gastrointestinal tract as a result of diminished *agni* (*agnimandya*). This *ama*, so formed, then gets absorbed and circulates throughout the body leading to *srotodushti* followed by *srotorodha*. Diseases resulting from such pathogenesis are said to be *amashayodbhava*. Every article of food is composed of five *mahabhutas*[8] in a definite proportion. The *mahabhautic* content of food determines its relative affinity to influence the nutritional processes of tissue cells composed of *dhatus* having similar type of *mahabhautic* ratio in their composition[9]. Thus, even the *ama* formed as a result of improper digestion of such food will only produce a disease in such tissues for which it has a preferential affinity. The second group comprises the *pakashayodbhava* diseases, i.e., those diseases which take their origin from *pakashaya*. The *pakashaya* is the lower part of the gastrointestinal tract by which most of the body waste products or *malas*, are excreted. If for any reason such as irregular habits there is a blockage of one or other channels or *srotamsi* by which these excreta find their way into the gastrointestinal tract, then there would result an accumulation of such excretory products leading to *srotorodha* followed by *srotadushti*.

Out of the three *doshas* mentioned above, *kapha* and *pitta* are said to take their origin from the *amashaya* or the upper part of the gastrointestinal tract, while *vata* arises from *pakashaya* or the lower portion of the alimentary tract[10]. *Shwasa roga* has been described by Charaka as *pittasthana-samudbhava*[11], i.e., it belongs to *amashayodbhava*[12] group. It is extremely important to understand the essential pathogenesis of a disease, especially its site of origin, as the treatment in *Ayurveda* aims at removal of *dosha* from the *mulasthana*[13] of the disease so as to break the vicious circle, i.e., *samanya-samprapti* and thereby aim at radical eradication of the disease process.

The *ama* may take different routes for transportation from the site of origin to the site of manifestation. On the basis of the course of spread of the *ama* all such diseases are classified into three main categories[14]. Firstly there are diseases which spread through alimento-respiratory tract which are known as *koshthanusari*. Others may spread through the circulating fluids like *rasa* and *rakta*, etc., and therefore are designated as *shakhanusari* while the third group is known as *marmasthisandhyanusari* as it is supposed to spread through vital organs, bones and joints. The *sanchara-marga* of *shwasa roga* is *koshtha*[15]. This concept has got an important bearing on the treatment. Thus the *sakhanusari* diseases can be successfully treated by a very elaborate *prepanchakarma* measures like *snehana* and *swedana*, while those diseases which are *koshthanusari* like *shwasa roga* can be successfully treated without much of these elaborate measures.[16]

Lastly, it must be remembered that the site of manifestation of diseases plays a vital role in its pathogenesis[17]. Ayurveda describes the site of manifestation of diseases in terms of *dhatu* and *srotamsi* or channels. The whole body is composed of seven *dhatus*. *Srotamsi* or channels comprise blood vessels and lymphatics along with the semipermeable intercellular spaces of their walls[18]. They supply the *dhatus* with nutrition from the end products of food and respiration[19]. Each of the seven *dhatus* is further divided into two types[20] depending upon the physiological functions it plays in the body. Thus, there is the *poshaka dhatu* which supplies nutrition and *poshya dhatu* which obtains nutrition from the former, thereby maintaining its specific functions. *Srotamsi* are consequently named according to the *poshaka*

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dhatu they carry. Besides these *dhatubaha srotamsi*, there are other channels for the transportation of such elements as oxygen (*ambarapiyusha*) and water, etc., which are named as *pranabaha** and *udakabaha srotamsi*[21] respectively. In *shwasa roga* these *prana* and *udakabaha srotamsi*[22] are affected along with *rasadhatu*[23].

It is thus apparent that the actual organs of the body, affected in *shwasa roga*, are intimately related with *prana* and *udakabaha srotamsi* and *rasadhatu*. These are then the *hridaya* (cardio-respiratory system), *mahasrotas* (alimentary tract), *talu* (palate) and *kloma* (trachea).

Since *rasa* is the dominant *dhatu* likely to be vitiated in *shwasa roga*, there is a loss of tone and strength of these organs. If *vayu* dominates the pathogenesis of this disease there is a continuous spasm of these organs, especially of *pranabaha srotas*. On the other hand, if *kapha dosha* plays a dominant role in the genesis of the diseases there would be a large amount of expectoration. Since *vayu* and *kapha* both take part in the *samanya samprapti* of the disease[24], the clinical picture seen will be governed by the relative preponderance of one or the other of these *doshas*. Thus, there would be either a marked dyspnoea or a marked coughing with expectoration or both depending upon whether *vayu* or *kapha* is playing a dominant part.

It is interesting to note here that according to *Ayurveda*, there is a vitiation of all the three *doshas* in *shwasa roga*. Whereas a diminution of the *pitta dosha* is responsible only in the either stage of the pathogenesis of the disease which leads to *agnimandya*, later stages are entirely due to aggravation of the remaining *doshas*, viz., *kapha* and *vata* resulting in the symptoms attributable to both *prana* and *udakabaha srotadushti*.

A consideration of the site of manifestation is important from therapeutic and prognostic points of view. In this disease *kapha dosha* is affected right at its main site of function, i.e., *uras* or chest. Besides, *pranavayu* which is so vital for the maintenance of body functions is also vitiated, making the prognosis, therefore, fairly grave, if the imbalance of *doshas* is allowed to go into a chronic stage[25]. Also, *uras* being the principal site of the disease, the vitiated *kapha* can be removed from its site fairly easily by resorting to *vamana*, a theraputic measure described to be of primary importance in the treatment of *kapha rogas* in Ayurveda[26].

Five groups of *shwasa rogas* have been descibed in Ayurveda depending upon the intensity of clinical picture and predominance of one or other symptoms. Thus, there are *maha, urdhwa, chhinna, tamaka* and *kshudra shwasas*[27]. But Charaka has very rightly grouped all the patients of *shwasa roga* into two main types depending upon *vata* and *kapha* in *vishishta samprapti* of the disease[28]. But he further describes a clinical condition of *tamaka shwasa* in which a dominance of *pitta dosha* is seen[29]. Thus, *tamaka shwasa* can manifest itself clinically in three different ways depending upon the relative dominance of *kapha, pitta* or *vata* in the *vishishta samprapti*.

It would be very clear from the above considerations of the pathogenesis of *shwasa roga* that Ayurveda lays a great stress on the rational methods of treatment aimed at eradication of the disease by taking into consideration the *mulasthana* or *udbhavasthana* and the course of disease resulting from the dominance of one or the other *dhatus* and *doshas*. Charaka, therefore, believed that *tamaka shwasa* should be treated by such means as would affect predominantly the organs at the origin of the disease as also those at its manifestation. He has, therefore strongly advocated that the *doshas* should be removed from their sites by *snehakta swedana* followed by *vamana* and *dhumrapana*[30]. He further states that most of the cases of *tamaka shwasa* are likely to get relief by such measures. But those which prove resistant could be further treated by administration of drugs like *pushkaramula*. In fact, Charaka attributes great properties to *pushkaramula*[31] in giving relief to patients of *shwasa roga* in general and *tamaka shwasa* in particular. It was, therefore, decided to undertake a study of *tamaka shwasa* with a view to test the efficacy of the various therapeutic measures and remedies described by Charaka in the treatment of the disease. A preliminary report on clinical trials with *pushkaramula* in the treatment of *tamaka shwasa* according to Ayurvedic concepts described above is presented here.

Method and Material

Selection of drug :

Botanically different specimens are presently available in the name of either *kushtha* or *pushkaramula* in different parts of the country. Three varieties have been obtained for clinical study from the local market.

Drug No. 1 is a root cut into pieces and supplied dried. The length of each piece is 5 to 10 cm. and circumference is 4 to 6 cm. The colour is blackish brown and the root is twisted and contorted in shape. Longitudinal ridges run all over the surface. It is difficult to break it and the

* There is a great deal of controversy regarding its identification.

broken surface is even. It is slightly salty and astringent to taste. The smell is pleasant. This drug has not yet been definitely identified pharmacognostically. Further work is in progress.

Drug No. 2 is also a root cut into pieces and supplied dried. Rootlets are present in some specimens. The length is 5 to 13 cm. and the circumference is 4¼ to 9¼ cm. The colour is light brown. It is almost straight except a few pieces which are slightly curved and few others are slightly tapering in shape. Longitudinal reticular fissures are seen all over the surface. It is brittle. The cut surface bears a lighter colour with a hollow pith and medullary rays extending from pith to periphery. The taste is sweet at first, then intensely bitter. It is hard and rough to touch and the smell is characteristic. This drug has been definitely identified in our pharmacognosy section as *Saussurea lappa*.

Drug No. 3 is a root cut and dried with branches, nodes, scarmarks and rootlets. The length is 5 to 9 cm. and circumference is 6 to 13 cm. The colour is light brown and the shape is twisted and contorted. It is very hard, difficult to break and there are concentric as well as radiating lines on the cut surface. The taste is slightly sweet, then intensely bitter and pungent. It is hard and rough to touch and bears a pleasant characteristic smell. This drug has been botanically identified as a member of the Inula species.

These three drugs were finely pulverised separately and ⅙th of *suddha hingula* was added to each variety and thoroughly mixed. 800 mg. of this preparation was administered five times a day in a few early cases. But it was given 4 times a day in all cases subsequently treated. *Hingula* has been described in Ayurveda as an activator, and a preservative.

SELECTION OF PATIENTS :

Patients attending the outpatients department of the Ayurvedic Research Unit were selected for study and admitted in the attached ward. Before admission each patient was thoroughly examined clinically by the medical officer of the Unit on the basis of modern medical methods and diagnosed as a case of bronchial asthma. Routine blood examination was done especially to rule out tropical eosinophilia and every patient was subjected to fluoroscopic and sputum examinations to exclude the possibility of obvious bronchiectasis, tuberculosis or acute cor pulmonale. Each patient was subsequently examined by Ayurvedic methods. All patients of *tamaka shwasa* so diagnosed were thus grouped into three categories as described by Charaka depending upon the dominance of the manifesting *dosha*. Thus, group A comprises those with dominance of *kapha dosha*, group B those with dominance of *pitta* and group C those with dominance of *vata dosha*. A detailed history with respect to the duration, severity of the disease, incidence in the family, relation to diet and occupation was obtained. Symptoms and signs were carefully recorded at the time of the first examination and subsequently followed up daily during the period of observation and treatment in the ward. In every case a record of the amount of sputum expectorated, its consistency, colour and smell was maintained daily. The severity, duration, number and the time during the day of attacks of breathlessness and noted carefully by interrogation as well as observation, day to day during the course of therapy. A detailed evaluation was done by the Medical Officer and the concerned *vaidya* independently.

Every patient was kept on observation for a period of seven days during which placebo consisting of *shalichurna* (rice powder), grain five, four times a day was administered. The patient was closely watched for signs and symptoms as described above and the effect of bed rest and environmental change on the course of the disease was evaluated before starting the therapy. At the end of seven days of observation, the patients were put on one of the drugs described above. Thus five patients were treated with drug No. 1, three with drug No. 2 and two patients with drug No. 3. Out of these three patients treated with drug No. 2 one had received drug No. 1 for a period of three weeks and was subsequently put on drug No. 2.

All the patients were put on S. S. general hospital diet without any restriction or alteration. Some patients were vegetarians and others were non-vegetarians. No patient was completely confined to bed and they were allowed to move freely in the ward. Three patients who went into acute spasmodic episodes, not responding to drugs, were temporarily treated during the period of emergency only with subcutaneous injection of adrenaline hydrochloride, 1 ml., 1 in 100 solution, and repeated when required, or with aminophylline 3¾ grains injected intravenously with well diluted solution of glucose. These drugs were used in these patients only during emergency, and were discontinued when the patients rallied.

All patients were treated for a period of three weeks and then discharged from the hospital and asked to report at the O.P.D. for follow-up. During the period of follow-up the drug was continued for the first few days in the same dosage.

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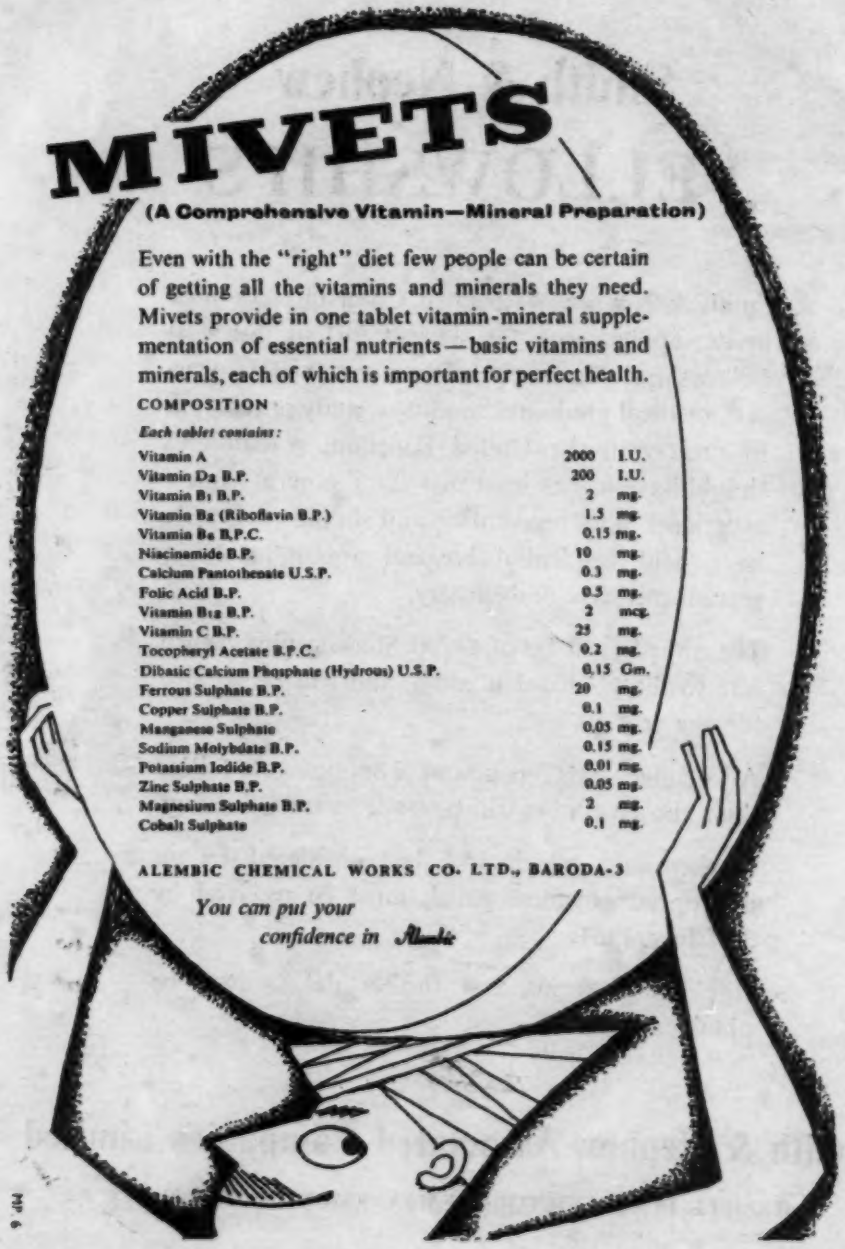

In each case the toxicity of the drug was carefully studied and toxic manifestations were noted. The dose was reduced when the toxicity was marked.

Result

Table 1 enumerates various signs and symptoms as described by Charaka. It can be seen that dyspnoea, cough and expectoration were seen in all patients under study. None of the patients showed protruded eyes, fainting attacks or shivering during attack as described by Charaka. Thus, dyspnoea, cough and expectoration are considered as diagnostic symptoms of *tamaka shwasa*, produced by the vitiation of *prana* and *udakabaha srotamsi*.

Table 2 summarises the data of the clinical study of nine patients of *tamaka shwasa* treated with three drugs. It can be seen that ages of the patients range from 35 to 55 years. The duration of the disease in all the cases varied from one month to ten years. Only three patients gave positive family history of their relations having suffered from *shwasa roga*. On the basis of clinical evaluation by Ayurvedic methods, six patients could be put into group A, indicating thereby a dominance of *kapha dosha* in their clinical picture, while the remaining three belonged to group C in whom *vata dosha* was seen to dominate. It can be seen that out of nine cases, five were treated with drug No. 1. Out of these, three were completely relieved of their symptoms, while two

Table 1—Showing Signs and Symptoms of Patients of Tamaka Shwasa as Described by Charaka and Their Incidence in Patients Studied

Signs and symptoms	Serial number of patients								
	1	2	3	4	5	6	7	8	9
1. Dyspnoea	P	P	P	P	P	P	P	P	P
2. Cough	P	P	P	P	P	P	P	P	P
3. Expectoration	P	P	P	P	P	P	P	P	P
4. Wheezing sound	P	P	P	P	P	A	A	A	P
5. Affliction of throat	P	P	P	P	P	A	P	A	P
6. Coryza	A	A	P	P	A	A	P	A	A
7 Difficulty of speaking during an attack ...	P	P	A	A	A	A	P	A	P
8. Dryness of mouth	A	A	A	P	A	A	A	P	P
9. Protruded eyes	A	A	A	A	A	A	A	A	A
10. Sweating of forehead	A	P	P	P	A	A	A	P	P
11. Thirst	A	P	A	A	P	A	A	P	P
12. Weakness	A	P	A	P	A	A	P	A	A
13. Shivering	A	A	A	A	A	A	A	A	A
14. Desire for *ushna padartha*	A	P	P	A	A	A	P	A	A
15. Repeated spitting	P	P	A	P	P	A	A	A	A
16. Fainting attacks	A	A	A	A	A	A	A	A	A

A=Absent; P=Present.

Table 2—Showing Clinical Evaluation of Nine Patients of Tamaka Shwasa Treated with Three Ayurvedic Drugs

Serial No. of Patient	Age (years)	Group	Incidence of disease in the family	Duration of the disease (years)	Drug No. used	Dose (mg/kg. in 24 hours)	Result	Drug toxicity
1	41	A	Father	5	1	65·5	Relieved	Dryness of mouth
2	50	C	...	2	1	112·5	Not relieved	do
3	50	A	...	1	1	69·0	Relieved	—
4	35	C	Mother	10	1	80·0	Relieved	Dryness of mouth
5	28	A	...	8	1 & 2	73·0	Not relieved	—
6	35	A	...	7	2	76·5	Relieved	—
7	35	C	Father	1	2	80·0	Relieved	—
8	55	A	...	1/12	3	80·0	Relieved	—
9	41	A	...	1	3	71·0	Conditions improved	—

proved resistant. Patient 5 who failed to respond to drug No. 1 was subsequently put on drug No. 2 for a period of two weeks. He failed to respond to the second drug also. Of the remaining four, two treated with drug No. 2 responded very well, whereas the remaining two cases were treated with drug No. 3, one of which was completely relieved of his condition ; the second patient improved to a very great extent. It can be seen further from Table 2 that there was hardly any remarkable toxicity directly attributable to the drug. However, there were three patients who on close interrogation complained of dryness of mouth. In most of the patients, it took on an average ten days of treatment before complete relief could be observed. One patient in whom the disease was of one month's duration, was relieved of his attacks of dyspnoea within a period of three days of administration of the drug.

Table 3 summarises the clinical status of all the nine patients of *tamaka shwasa* before and during the period of treatment on the basis of number of attacks, with their severity and the amount of sputum expectorated. Thus, it can be seen that five out of nine patients, were free of their attacks at the end of three weeks of treatment. The clinical attacks in all the five cases became less severe at the end of the first week of therapy. In two cases, though they were not completely free from their attacks, there was remarkable diminution in the severity of symptoms at the end of the fourth week. Two patients proved refractory to treatment and were given adrenaline and aminophylline during severe attacks. It can be further seen that the total number of attacks taken together in all the nine patients showed a gradual fall when followed up from the first to the fourth week of stay in the hospital. During the first week of placebo administration there was no significant reduction in the number and severity of attacks due to a change in environmental conditions and bed rest. In all patients who were relieved as a result of therapy there was a significaht reduction in the amount of expectoration.

Discussions

In this series of nine patients none belonged to group B, indicating thereby a rarity of such a condition. Group B comprises patients who show dominance of *pitta dosha*. It is worth noting here, that *pitta* does not take part in the *samanya samprapti* of the disease—hence its dominance in *bishishta samprapti* is also a rare occurrence.

The duration of the disease did not much affect the efficacy of the drug used. All patients who were relieved by the therapy had varying durations of the disease process. Only in the patient where the disease was of the shortest duration, i.e., one month, the effect observed was remarkable. This patient was relived after three days of treatment only, whereas others took on an average of ten days for relief. It may therefore be conjectured that after a certain stage, *srotodushti* does not seem to undergo much variation in intensity, since the drugs used continue to be effective irrespective of the duration of the disease process.

Table 3—Showing the Total Number of Attacks with their Intensity and Amount of Expectoration per 24 hours during Each Week of Observation Before and During Drug Therapy

Serial No. of patient	First week			Second week			Third week			Fourth week		
	Total No. of attacks	Intensity of attacks	Expectoration in oz. (average of 24 hrs.)	Total No. of attacks	Intensity of attacks	Expectoration in oz. (average of 24 hrs.)	Total No. of attacks	Intensity of attacks	Expectoration in oz. (average of 24 hrs.)	Total No. of attacks	Intensity of attacks	Expectoration in oz. (average of 24 hrs.)
1	3	M	4	1	M	3	—	—	1	—	—	½
2	7	S	6	7	S	6	7	S	6	7	S	4
3	4	M	1	2	m	1	—	—	½	—	—	—
4	8	S	1	6	S	1	8	M	½	1	m	½
5	1	S	3	2	S	3	2	S	2	2	S	4
6	7	M	2	4	M	1	1	—	1	—	—	½
7	8	M	2	9	M	2	7	M	2	5	m	1
8	5	M	1	3	m	½	—	—	—	—	—	—
9	7	M	1	4	M	½	4	m	½	—	—	½

m=Mild; M=Medium; S=Severe.

There exists some controversy regarding the nomenclature of *pushkaramula*. A view prevails among some vaidyas that *kushtha* and *pushkaramula* are synonymous while others believe that these are two different drugs, both of them being equally efficacious in *shwasa roga*. Then again there is a difference of opinion on the botanical identification of *pushkaramula* and *kushtha*. *Kushtha* is well known since the Vedic era, whereas the mention of *pushkaramula* occurs only in Samhita age. A study of Charaka and Sushruta reveals that *pushkaramula* and *kushtha* are two entirely different drugs. The former is prescribed as a good remedy of *shwasa roga*[33] whereas the latter is mentioned as the best drug for the alleviation of *vata dosha*.[33] *Pushkaramula* acts in *uras* the site of *pranavaha srotas* and alleviates *kapha dosha* indicating thereby the dominance of *akasha mahabhuta* is its constituent. On the other hand *kushtha* acts on *pakashaya* the main site of *vata dosha* indicating thereby the dominance of *pruthwi* and *ap mahabhuta* in its constituent. Some confusion seems to have crept in at the time of compilation of Ayurvedic classics as can be seen from the *Nighantu* written by Bhava Mishra. He has described *pushkaramula* as a type of *kushtha*[34]. Since then one was used as a subtitute for the other[35]. These two plants being inhabitants of Kashmir valley, growing in the vicinity of rivers, were described in Sanskrit literature by almost the same synonyms. It thus becomes a difficult problem to establish the botanical identity of these two plants on the basis of descriptive synonyms.

A greater part of the problem is thus labelling a drug at *kushtha* or *pushkaramula*. A study of literature reveals that there are four drugs now controverted in the name of either *pushkaramula* or *kushtha*. They are as follows:

1. *Saussurea lappa*—N. O. Compositae.
2. *Inula racemosa*—N. O. Compositae.
3. *Costus speciosus*—N. O. Scitamineae.
4. *Iris germanica*—N. O. Irideae.

From the local market botanically three different specimens have been received either in the name of *pushkaramula* or *kushtha* from which drug No. 2 is identified pharmacognostically as *Saussurea lappa* and drug No. 3 to be of Inula species. It appears from clinical study that all three drugs are useful in *tamaka shwasa*.

There have been some report on *Saassurea lappa*. Dutta[36] *et al* (1960) have isolated an alkaloid which they claim to be a bronchodilator. It, therefore, appears that all the three drugs may contain bronchodilator principles in varying proportions. Further work on pharmacology and pharmacognosy of all the samples available under the name *pushkaramula* and *kushtha* will be reported separately.

All *doshas* as mentioned before take their origin from one or the other part of the gastro-intestinal tract. Their imbalance due to excess can be corrected by their removal from the body, *via* the alimentary tract. *Panchakarma* therapy is based on this concept and three of them, i.e., *vamana, virechana* and *basti* are especially important for the alleviation of *kapha, pitta* and *vata dosha respectively*[37]. Both *amashaya* and *uras* are closely interlinked with the manifestations of *shwasa roga* and the former is the site of origin of *kapha dosha* whereas the latter is the main site of its action. Hence *vamana* which is said to be the best therapy for relief of *kapha vridhi* plays an important role in the treatment of this disease. It may be that some of the patients who failed to get relief by any of the drugs used in this series or those who prove resistant to conventional drugs of modern medicine may be benefited by the *panchakarma* therapy. It is, therefore, proposed to evaluate the efficacy of *panchakarma* therapy in *tamaka shwasa* in a future work.

Summary

A review of the concepts of *shwasa roga* in Ayurveda is presented.

A rational approach of Ayurveda aiming at eradication of the disease is emphasised.

Result of treatment of nine patients suffering from *tamaka shwasa* by three different drugs controverted in the name of either *pushkaramula* or *kushtha* is given.

Importance of *panchakarma* therapy in the treatment of *shwasa roga* is briefly discussed.

Acknowledgment

We thank Dr. Jivraj N. Mehta, Chairman, Research Sub-Committee, Seth U. P. A. Research Unit, M. S. University, Baroda, for his keen interest in and encouragement for the research activity of the Unit. We also, thank the Dean, Medical College, Baroda, for providing facilities to carry out this work. We express our thanks to the Medical Officer for his co-operation in the project. The help rendered by Kumari Savita Satkopana of our Unit, in the identification of drugs is acknowledged. We thank all other vaidyas for their criticism and suggestions in preparing this paper.

References

[1] Sushruta: Sutra 15: 3. [2] Charaka, Vimana 1: 5. [3] Sushruta: Sutra 14: 20. [4] Sushuta: Sutra 15: 5. [5] *Ibid*. [6] Charaka: Sutra 12: 13. [7] Charaka: Vimana 6: 3. [8] Sushruta: Sutra 46: 526. [9] Charaka: Chikitsa 15: 14. [10] Charaka: Sutra 20: 8.

[12] Charaka : Chikitsa 17 : 8.
[13] Ashtanga Hridaya : Nidana 4 : 4.
[14] Charaka : Sutra 20 : 13, 16, 19. [15] Charaka : Sutra II : 49.
[16] *Ibid.* [17] Chakrapani on Charaka : Sutra 11 : 48.
[18] Charaka : Sutra 18 : 42-43. [19] Charaka : Vimana 5 : 9.
[20] Charaka : Vimana 5 : 1.
[21] Chakrapani on Charaka : Chikitsa 15 : 17.
[22] Charaka : Vimana 5 : 5.
[23] Chakrapani on Charaka : Chikitsa 15 : 45.
[24] Charaka : Chikitsa 17 : 8. [25] *Ibid.* [26] *Ibid* : 9.
[27] Charaka : Sutra 20 : 19.
[28] Ashtanga Hridaya : Nidana 4 : 2.
[29] Charaka : Chikitsa 17 : 88. [30] *Ibid* : 63-64.
[31] *Ibid* : 71, 75, 77. [32] Charaka : Sutra 25 : 40.
[33] Charaka : Sutra 25 : 40. [34] *Ibid.*
[35] Bhavaprakasha : Purvakhanda : Chapter 5.
[36] Adhamalla on Sarangadhara : Madhyamakhanda, Chapter 6 : 38.
[37] DUTTA, N. K., SASTRY, M. S. AND TAMHANE, R. G.—*Indian J. Pharmacy*, **22** : 6, 1960.
[38] Ashtanga Hridaya : Sutra 1 : 25.

CASE NOTE

AINHUM

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Ainhum (spontaneous dactylolysis) is a very peculiar disease affecting the toes, particularly the little toes of Negroes, East Indians and other dark-skinned races. The name, derived from the Naga dialect, means "to saw or cut". Forty-five cases were reported from Panama and also in three members of a Lebanese family in Beirut. Pseudo-ainhum is believed to be due to nerve damage.

The disease occurs in active and otherwise healthy adults. Its incidence is 1·5 in 10,000. It commences as a narrow groove in the skin, almost invariably on the inner and plantar side of the root of the little toe or little finger. Sometimes it may be bilateral. It may occur in one foot only, or in both feet simultaneously, or it may affect one foot after the other. The groove, once started, deepens and gradually extends round the whole circumference of the toe and ultimately the toe falls off. Pain may be absent but sometimes it is pronounced and progressive. Of the other toes, the fourth is the one which is most frequently affected. No relationship to leprosy, yaws, scleroderma or syphilis has been noted.

Ainhum is most common in adult males and very rare in women and children. It runs its course in from one to ten or even more years.

It has been suggested that division of the constricting fibrous band would delay the progress of the disease. When troublesome, the affected toe should be amputated.

CASE REPORT

J. R., aged 40, resident of Nepal and labourer by occupation, was admitted on 3-2-60 with complaints of pain and constriction around the right little toe. The trouble started 14 years back with a sense of constriction at the base of the right little toe and pain. The groove started forming on the inner side of the toe and went on deepening slowly all around it. The pain used to come every third or fourth month, and last for a few days only. There was no history of syphilis, local injury or history of having used any ring in the toe. He has married and had four children. There was no history of abortion in his wife.

On examination, there was found no evidence of any stigmata of syphilis. There was no patch of anaesthesia or hypopigmentation and there was no thickening of the nerves. His right little toe was slightly swollen, with a band-like constriction all around its base—the groove being deeper medially. Other toes on the right side were normal (Fig. 1, *vide* Plate). There was a slight groove, dorsally, over the left little toe.

INVESTIGATIONS :

Urine—Normal

Blood—Total W.B.C., 6,500 per c.mm. with polymorphs 46 per cent ; lymphocytes 48 per cent ; eosinophils 4 per cent and monocytes 2 per cent.

Nasal smear—No lepra bacilli seen.

W. R.—Negative

X-ray showed thinning of phalanx of right little toe with a line of cleavage in middle, resembling fracture, shown by arrow (Fig. 2 *vide* Plate). Other two phalanges were atrophied.

OPERATION :

Right little toe was amputated at the metatarsophalangeal joint and longitudinal dorsal slitting was done over the left little toe to divide the constricting fibrous band.

DISCUSSION

The diagnosis was made on the typical appearance of the toes. Leprosy, syphilis, diabetes mellitus and scleroderma were excluded clinically and by laboratory investigations. The disease typically started in the right little toe and even after 14 years complete separation of the toe had not taken place. Corresponding toe on the left side was not appreciably affected during this long period. Pain was quite a marked feature in this case.

SUMMARY

A case of ainhum has been discussed.

ACKNOWLEDGMENTS

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RUPTURE OF AMOEBIC ABSCESS OF THE LIVER

Amoebic abscess of the liver is frequently unrecognised for long periods often leading to its rupture. The majority of the ruptures occurs into the right pleural cavity or the lower lobe of the right lung. These abscesses may also rupture into the peritoneum, the mediastinum, the pericardium, the stomach, colon and small intestines, the inferior vena cava, the right kidney, between the lumbar muscles or through the skin in the hepatic or right lumbar region[1]. In the past, many of these complications were diagnosed on the autopsy table. Craig[1], for example, recorded 624 cases of amoebic liver abscess, of which no less than 192 or 30 per cent were detected at autopsy. With the improvement of clinical knowledge and techniques, more and more cases are being diagnosed clinically. Similarly, the mortality rate of these complications, which was once so high, has now been reduced appreciably with the use of modern drugs.

Intraperitoneal rupture of an amoebic abscess is characterised by sudden acute abdominal pain and evidence of traumatic shock. This is followed by a stage of short-lived peritonism with pain in the abdomen and marked tenderness and rigidity of the abdominal wall. This stage is soon followed by abdominal distension due to amoebic pus, which can be demonstrated as free fluid in the peritoneal cavity. Depending on the severity of the case, there is often cardiorespiratory embarrassment. The size of the liver is often reduced remarkably after rupture of the abscess. When the diagnosis is made on the operation table, the whole pus can be drained. But, if the condition is kept in mind, this complication can often be diagnosed clinically and treated with repeated aspirations, and administration of emetine and chloroquine. It is surprising, how innocuous may be the long-term results of amoebic liver pus within the peritoneal cavity[2] ; and if the patient survives the initial shock, the prognosis should be good with proper treatment. Surgery should be avoided as far as possible.

Abscesses of the left lobe rupture into the pericardium causing pericardial complications. There may be only a 'sympathetic' or a slightly purulent effusion into the pericardial cavity, or there may be intrapericardial rupture of the liver abscess, which may result, after a few months, in constrictive pericarditis. Patients with these complications are differentiated only by the examination of the pericardial fluid. The patients usually present themselves as cases of pericarditis with effusion. On examination it is found that they have pulsus paradoxus, markedly engorged neck veins, greatly enlarged and tender liver and an enlarged heart with stony dullness, feeble heart sounds and, maybe, a pericardial rub. The diagnosis can be suspected if the patient has been running high temperature, and gives history of dysentery in the past, if the enlargement and tenderness of the liver are out of proportion to other signs and the clinical picture, and if a localised swelling of the liver, in addition, is detectable. In most instances, the diagnosis is made only after tapping the pericardial cavity and the left lobe of the liver. To prevent cardiac tamponade, the patients should be repeatedly tapped and medical treatment should be enthusiastically followed. However, these abscesses should be viewed with great concern and surgery may be considered particularly when these patients come late and have already developed constriction and thickening of the pericardium.

The pleuropulmonary complications of the liver abscess are well known and have been reviewed elsewhere in this issue of the Journal by Kapoor *et al*[3]. Here again, the liver abscess may rupture directly into the right or the left pleural cavity leading to a generalised empyema or to only a supradiaphragmatic empyema. Occasionally the pus may track up through a track to form an interlobar empyema. Rupture into the lung occurs usually in the lower lobe, where a lung abscess is formed. Rarely, the pus may track up to form a lung abscess in the upper lobe. All these pulmonary complications are of course quite different from other causes of pulmonary amoebiasis[4], which can occur either secondary to amoebic hepatitis, without an abscess or through an

[1] Craig, C. F.—The Aetiology, Diagnosis and Treatment of Amoebiasis 1944, Williams & Wilkins, Baltimore, p. 156.

[2] Larmont, N. McE. and Pooler, N. R.—*Quart. J. Med.*, **27** : 401, 1958.

[3] Kapoor, O. P., Shah, N. and Billimoria, B. R.—*J. Indian M. A.*, **36** : 506, 1961.

[4] Chakravarti, A.—*Ibid*, **20** : 309, 1951.

embolism from a colonic ulcer[5]. The demonstration of *E. histolytica* in the sputum is diagnostic[6] but in its absence the immediate response to emetine or chloroquine is an equally convincing therapeutic test for the diagnosis[7]. The management of pleuropulmonary complications is well discussed by Kapoor *et al*[3]. As far as possible, surgical treatment should be avoided and administration of emetine, chloroquine and broad-spectrum antibiotics together and repeated aspirations should suffice.

Lastly, simultaneous rupture of the liver abscess into the pleural and peritoneal cavities has been described. Most of these cases are diagnosed post mortem or on the operation table. If such a complication is kept in mind a clinical diagnosis may be possible.

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[5] *Idem—Ibid*, **21** : 388, 1952.

[6] Webster, B. H.—*Am. Rev. Resp. Dis.*, **81** : 683, 1960.

[7] Dormer, B. A. and Freidlander, J.—*Brit. M. J.*, **1** : 258, 1941.

VENTRICULAR FIBRILLATION IN HYPOTHERMIA

Acutely induced hypothermia seems to be the ideal way of reducing metabolism and it holds great promise in all major surgical operations and particularly in cardiac surgery. The special liability of the cold heart for developing ventricular irregularity and fibrillation has been the subject of much enquiry and hypoxia, CO_2 retention and blood potassium changes have in turn been incriminated by different authors. Ventricular fibrillation occurring in experimental hypothermia is refractory to usual methods of resuscitation. Prevention or successful treatment of ventricular fibrillation is essential to make it a useful procedure in surgery. Prevedel *et al*[1] attempted to defibrillate the heart in experimental hypothermia by using prostigmine. The venae cavae were occluded and 15 seconds later the ascending aorta was occluded distal to the coronary arteries. In the control series of animals no medication was given. In one experimental group 2 ml. of 1 in 4,000 solution of prostigmine was administered by coronary perfusion until the heart rate was reduced to 10-15 beats per minute. Right ventriculotomy was then performed. In the control series all the animals showed ventricular fibrillation.

In the experimental group when the drug was given by coronary perfusion there was no incidence of ventricular fibrillation at all, proving that prostigmine has antifibrillatory effect in the hypothermic dog.

Experimentally defibrillation of the heart was possible by injection of 2 ml. of KCl (half m.Eq. per ml.) into the root of the aorta and massaging the heart. Then administration of 2 per cent calcium chloride (0·1 ml. at a time) restored regular cardiac action.

Riberi *et al*[2] were able to prevent ventricular fibrillation by S.A. node blockade with procaine. They injected 1 per cent solution of procaine hydrochloride into the right atrial wall and along the cephalad portion of the interatrial groove, into the adjacent portion of the right atrial wall and along the margin of the union of superior vena cava and atrium till they found significant slowing of the heart rate and alterations in the P wave in E.C.G. Then right auriculotomy was performed. A finger was introduced then through the right atrial appendage and passed into the right ventricle through the tricuspid valve. The ventricular wall was massaged for two minutes. None of the five animals protected with procaine developed ventricular fibrillation. In the control group of five animals, on the other hand, fibrillation developed in all cases.

As yet no single drug can be relied upon to prevent or check ventricular fibrillation in hypothermia. Prostigmine, potassium, calcium, procaine and adrenolytic drugs (dibenamine) have given good results.

Work has been undertaken in this country to study the effect of various antifibrillatory drugs at temperatures between 24°-25°C. Coronary perfusion of quinine, hydroquinidine, procaine, prostigmine, etc., has been tried to find out their effects. The effect of intravenous administration of procaine before venous and arterial occlusion and elective cardiac arrest with potassium citrate have also been studied. Dogs were chosen as experimental animals because of their easy availability and also because of the availability of experimental data of previous workers.

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[1] Prevedel, A. R., Montgomery, V. and Swan, H.—*Proc. Soc. Exper. Biol. & Med.*, **85** : 596, 1954.

[2] Riberi, A., Siderys, H. and Shumacker, H. B., Jr.—*Ann. Surg.*, **143** : 216, 1956.

GENERAL PRACTICE DIGEST

TREATMENT OF ALOPECIA AREATA

The diagnosis of alopecia areata is easy, but its aetiology is often obscure and treatment very unsatisfactory. Heredity is believed to play some part, and Brown (1928) reported it in the forebears of 28 out of 135 patients with the disorder. Many writers having postulated some infective agent, reported epidemics of alopecia, or even cultured specific micro-organisms, but most of these reports are now considered as suspect by modern criteria. The most popular theory today is that alopecia areata is of psychogenic origin, but recently it has been very vigorously opposed. Even if the psychogenic theory is accepted the exact peripheral mechanism is difficult to explain, although French writers have suggested an underlying vasoconstriction and claimed cures from the local injection of vasodilators.

Recently the volume and number of mitotic cells in the hair matrix (the lower part of the bulb) and in the dermal papilla have been examined (Van Scott and Ekel, 1958). In alopecia areata both the hair matrix and the dermal papilla were found small, but the degree of reduction of the matrix was greater than that of the papilla. After patients had been treated for three weeks with prednisone the volume and number of cells in the matrix had increased towards the normal value, but the papilla had remained unaffected. Previously (Van Scott, 1958) a perivascular amorphous degeneration in the connective tissue stalk of the papilla in alopecia areata was demonstrated and this was believed to be of primary importance. How prednisone exerts its beneficial effect on the growth of the hair is uncertain. Possibly it prevents the cellular infiltration or inhibits the perivascular degeneration. This does not, however, explain the papilla's failure to increase in size. In discussing the above, it has been suggested (Rothman, 1958) that alopecia areata was due to a displacement of melanin from melanocytes and a subsequent allergic reaction to this; cortisone might then act as an anti-allergic and anti-inflammatory agent. Alopecia has been produced (Braun-Falco and Theisen, 1957) in rats by injecting enzyme inhibitors and the matrix cells have been found to be most sensitive to metabolic upsets.

Whatever may be the exact mechanism of alopecia areata, cortisone appears to protect the hair follicle from damage without influencing the underlying cause. Regrowth after treatment with cortisone has been observed in 16 out of 22 patients, but it was mostly patchy and the hair fell out when treatment was stopped (Dillaha and Rothman, 1952). To avoid side-effects, local applications were tried, but without effect. However, intradermal injections of hydrocortisone proved more successful; and some regrowth in 73 per cent of cases has been claimed (Huries and Desmons, 1953). A series of about 60 patients were treated with injections of hydrocortisone acetate and one of them showed permanent regrowth (Frain-Bell, 1957). It is claimed that hydrocortisone by injection accelerated regrowth of hair in those cases that presumably otherwise would have a good prognosis; but that it had no satisfactory effect, other than producing a variable initial regrowth, in those cases with presumably a bad prognosis. More recently good results have been claimed from intradermal injections of 10 mg. of microcrystalline prednisolone trimethylacetate, given daily for several weeks and then in less frequent doses (Risse-Sundermann, 1960). After about 10 days a local depression in the tissues is seen, and the growth of dark hair occurred after three to six weeks. All of 21 patients treated responded in this way, and during two years of observation none lost the hair in the injected areas, though no hair regrew on the non-injected patches. Despite such encouraging findings this method of treatment has not found much favour among British dermatologists, since any regrowth is patchy and the ultimate prognosis is probably not materially affected.

—From an annotation in *Brit. M. J.*, **1**: 349, 1961.

References

Braun-Falco, O. and Theisen, H.—*Arch. klin. u. exper. Dermat.*, **208**: 317, 1959.

Brown, H.—*Brit. J. Dermat.*, **41**: 299, 1928.

Dillaha, C. J. and Rothman, S.—*J.A.M.A.*, **150**: 546, 1952.

Frain-Bell, W.—*Brit. J. Dermat.*, **69**: 66, 1957.

Huriez, C. and Desmons, F.—*Bull. Soc. Franc. Dermat. et Syph.*, **60**: 436, 1953.

Risse-Sundermann, A.—*German M. Month.*, **5**: 221, 1960.

Rothman, S.—*J. Invest. Dermat.*, **31**: 287, 1958.

Van Scott, E. J.—*Ibid*, **31**: 35, 1958.

Van Scott, E. J. and Ekel, T. M.—*Ibid*, **31**: 281, 1958.

CURRENT MEDICAL LITERATURE

Prednisolone in Pulmonary Tuberculosis

Horne, N. W. (*Brit. M. J.*, **2**: 1751, 1960) gives in the following lines the summary of the Final Report to the Research Committee of the Tuberculosis Society of Scotland on Prednisolone in treatment of pulmonary tuberculosis:

The results of treatment in a controlled trial are reported in which 91 patients were treated with chemotherapy alone and 87 with identical chemotherapy plus prednisolone in a dosage of 20 mg. daily for three months. The observation period in all cases was 12 months.

In the prednisolone group clinical improvement was hastened, especially in those acutely ill, and the fall in the erythrocyte sedimentation rate was more rapid.

Although the rate of cavity closure was not increased general radiographic improvement was more rapid throughout the 12-month period in the prednisolone group, the difference between the two groups being statistically significant in the first four months.

Sputum conversion was hastened in the prednisolone group to a statistically significant degree up to the end of the second month, but by the end of six months

no difference was observed, all but one of the 178 cases being sputum-negative on culture.

No permanent deleterious effect was observed in the prednisolone-treated patients, though a temporary "rebound" phenomenon was observed radiographically on ceasing prednisolone therapy in 11 per cent of cases.

Major side-effects were observed in only two of the patients treated with prednisolone.

The need for a study which includes the recording of respiratory function is emphasised.

Respiratory Allergy in Cystic Fibrosis

KULCZYCKI, L. L., MUELLER, H. AND SHWACHMAN, H. (*J.A.M.A.*, **175**: 104, 1961) from the Department of Medicine, the Division of Laboratories and Research, and the Allergy Unit; Children's Hospital Medical Centre, and the Department of Paediatrics, Harvard Medical School, write:

The incidence of allergy was studied in 266 living patients with cystic fibrosis, varying in age from 1½ to 35 years. An initial survey by a questionnaire indicated that 96 patients, or 36·6 per cent, required further detailed studies to ascertain the nature of a suspected allergy. Additional studies over a period of time, with repeated examinations and allergy skin tests, confirmed the presence of allergy in 47 patients, with a predominance of respiratory allergy noted in 44 patients, or 16·6 per cent.

In spite of many aetiological, clinical, and pathological differences between asthma and cystic fibrosis, there are many similarities in the pulmonary manifestations of both conditions, which, indeed, may coexist in the same patient. Similarly, the upper respiratory tract mucosa may respond in cystic fibrosis or allergy alike. In a patient with chronic respiratory manifestations, the diagnosis of cystic fibrosis may be overlooked and the clinical impression of allergy may be misleading, until the basic diagnostic procedures such as sweat-electrolyte analysis and allergy skin tests support the history and the clinical findings. On the other hand, the patient with cystic fibrosis may develop allergic manifestations, which should be investigated and treated concurrently.

In conclusion, the physician evaluating chronic respiratory disease in this patient should carefully elicit the features of allergy and cystic fibrosis, regardless of whether the patient is an adult or a child. The readily available sweat test should be used freely in order to establish the diagnosis of cystic fibrosis. Our studies indicated a normal sweat-electrolyte pattern in patients with respiratory allergy. The only condition encountered with uniformly high sweat-electrolyte levels was cystic fibrosis.

Use of a New Diagnostic Agent in Pituitary and Adrenocortical Disorders

GOLD, E. M., KENT, J. R. AND FORSHAM, P. H. (*Ann. Int. Med.*, **54**: 175, 1961) from San Francisco, California, give in the following lines the summary of their observations on the clinical use of a new diagnostic agent, methopyrapone (SU-4885), in pituitary and adrenocortical disorders:

Eighty-six patients received standardised intravenous methopyrapone (SU-4885) in tests designed to evaluate ACTH reserve.

Compared to a normal rise in 24-hour urinary 17-ketogenic steroids of from 12 to 15 mg., patients with hypothalamic lesions showed a markedly reduced response, as did those with nonfunctioning pituitary tumours generally. However, when associated with acromegaly, the response was usually normal.

In the presence of Cushing's syndrome, a normal or greater than normal response was noted in patients with overactivity of the adrenal cortices in the absence of demonstrable tumours. In contrast, two cases of carcinoma and two cases of adenoma failed to show a significant rise in 17-ketogenic steroids, making this a useful differential point. Adrenal insufficiency and hypothyroidism, as well as uncontrolled hyperthyroidism, seemed to decrease the response to SU-4885 markedly.

Four cases with a poor preoperative response to SU-4885 showed a significant rise in urinary 17-ketogenic steroids in surgery, demonstrating that a negative response to SU-4885 does not necessarily call for corticoid coverage during operation.

Methopyrapone (SU-4885) appears to be a useful diagnostic adjunct in diseases of the hypothalamic pituitary adrenal area, provided that abnormalities of thyroid function and primary adrenal insufficiency have been ruled out.

Clinical Aspects of Cardiomyopathy

GOODWIN, J. F., GORDON, H., HOLLMAN, A. AND BISHOP, M. B. (*Brit. M. J.*, **1**: 69, 1961) from the Departments of Medicine and Surgery, Postgraduate Medical School and Hammersmith Hospital, London, write:

An attempt has been made to classify clinically the cardiomyopathies according to three major clinical presentations: (1) a presentation with congestive heart failure and atrioventricular valvular incompetence, usually simulating ischaemic heart disease; (2) a presentation simulating constrictive pericarditis; and (3) a presentation simulating obstruction to one or other inflow or outflow tract, the commonest being the outflow tract of the left ventricle. In the first type systolic murmurs are common, are attributable to atrioventricular valve incompetence, and are pansystolic. In the second type, murmurs are equivocal or trivial ond may usually be neglected. In the third tyep the murmurs will vary according to the site of obstruction to blood flow, but in the majority of cases the murmurs are loud and of ejection type.

The presentation with congestive heart failure and a large heart is usually seen in patients in whom the myocardium is extensively involved and becomes flabby and the heart dilated. The presentation with constriction is often found to have associated endocardial and pericardial involvement, and, in addition, a stiff, inelastic myocardium which resists relaxation in diastole, thus simulating constrictive pericarditis. We have termed this type "constrictive cardiomyopathy".

The three groups have been described clinically and the results of special investigations mentioned. Illustrative case histories have been included, as have the results of pathological studies where available. It is

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REFERENCES:

K. H. Gour, M.D., F.R.C.P.E., F.R.F.P.S.G., D.C.H. (Eng.), D.P.H., and Sudhir Gupta, B.Sc., M.B.,B.S., D.C.H., *Current Medical Practice*, 1959, 3, 135.

B. J. Jussawalla, M.S., F.R.C.S. (E), F.I.C.S., *Journal of the Indian Medical Profession*, 1956, 10, 964.

R. C. Sahu, M.B.,B.S., D.P.H. (Eng.), D.C.H. (Lond.), D.T.M. & H. (Liverpool), F.D.S. (Lond.), *The Medical Digest*, 1954, 9, 483.

S. H. Ranade, B.Sc., M.B.,B.S., D.D.V., F.C.P.S. and G. K. Raje, M.B.,B.S., D.D.V., *The Antiseptic*, 1958, 2, 111.

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suggested that awareness of the types of clinical presentation should facilitate diagnosis, and when this becomes more accurate should lead to valuable clues to the discovery of the cause of many cases of cardiomyopathy.

Prognosis and Survival in the Aftermath of Hemiplegia

ADAMS, G. F. AND MERRETT, J. D. (*Brit. M. J.*, **1**: 310, 1961) from Belfast, give in the following lines the summary of their observations on the prognosis and survival in the aftermath of hemiplegia:

Prognosis and survival has been studied in a series of 736 patients with hemiplegia of vascular origin who were accepted for rehabilitation two weeks or more after the onset of their strokes.

They were classified in three groups—those who recovered (within two arbitrary grades), who failed to respond to treatment and became chronic invalids, and those who died within two months of onset. 81 per cent of the patients survived those two months, but their chance of being able to get about and look after themselves was little better than that of becoming relatively helpless invalids.

Older patients were more likely to be permanently incapacitated, but age in itself did not preclude a good recovery nor, contrary to the general belief, did a lesion of the dominant hemisphere. Recoveries included a significantly greater proportion of men with dominant-hemisphere lesions and the same trend was evident amongst the women.

Blood-pressures in these patients were higher on average than those in samples of old people in the general population, and the blood-pressures of the women were higher than those of the men.

The earlier physical retraining began the better, and, if successful, the recovered patient had an even chance of maintaining a relatively active life for at least six years if under 65 years of age at the onset, or for three and a half years as a man and four years as a woman over that age.

Occupation, Trauma, and Cardiovascular Disease

ISAACS, J. H. (*Ann. Int. Med.*, **54**: 229, 1961) from the Department of Cardiology, University of Southern California School of Medicine, write:

Occupational stress or trauma may and can aggravate or accelerate as well as directly and indirectly cause cardiovascular disease and dysfunction.

Individuals with pre-existing cardiovascular disease, particularly coronary artery and coronary heart disease, known or undetected, are more susceptible to and develop more extensive cardiac disability from trauma or occupational stress.

Establishing a causal relationship between cardiovascular disease or disorder and the alleged traumatic or occupational stress requires careful consideration of medical criteria and detailed analysis of circumstances and events preceding and following the alleged causative factor(s). Objective as well as subjective evidence should be available to establish the nature and extent of a resulting cardiovascular disorder.

Permanent status resulting from the trauma or occupational stress must be accurately determined, whether full recovery, partial or total disability, or death.

Haemodynamic Studies in Acute Pulmonary Oedema

FINLAYSON, J. K., LURIA, M., STANFIELD, C. P. AND YU, P. N. (*Ann. Int. Med.*, **54**: 244, 1961) from the Cardiopulmonary Laboratory, Department of Medicine, University of Rochester School of Medicine and Dentistry, and Medical Clinics of Strong Memorial and Rochester Municipal Hospitals, Rochester, New York, observe:

Haemodynamic changes are described in five patients, before, during, and after episodes of acute pulmonary oedema.

The principal findings included a marked rise in pulmonary artery and pulmonary wedge pressures, low cardiac output, increased heart rate, and decreased diastolic filling period. Marked elevation of systemic blood pressure and increase in right ventricular diastolic pressure were observed in two patients.

Four patients were treated with intravenous hexamethonium in doses ranging from 6·5 to 25 mg. and all showed a dramatic response to the drug with regression of the above changes and prompt clinical improvement.

Renal Manifestations of Systemic Erythematosus

SOFFER, L. J., SOUTHERN, L., WEINER, H. E. AND WOLF, R. L., (*Ann. Int. Med.*, **54**: 215, 1961) from the Endocrine Research Laboratory and Clinic of the Department of Medicine of the Mount Sinai Hospital, New York, from clinical and pathological study of 90 cases with renal manifestations of systemic lupus erythematosus observe:

Renal manifestations were studied in 90 patients with systemic lupus erythematosus who were seen at the Mount Sinai Hospital from 1949 to 1959. The series included 56 with renal disease.

The study served to emphasise the grave prognostic implications of involvement of the kidneys in systemic lupus erythematosus. Evidence of persistent and significant impairment of renal functions was almost invariably encountered in those individuals who succumbed to the disease.

The younger the individual, the greater was the frequency and severity of the renal involvement.

The patients who had kidney damage generally manifested it early in the course of the illness. The longer the disease continued without the development of this complication, the less likely was it to occur.

Hypertension, when present, was almost always found in association with renal damage, although over 50 per cent of this group failed to manifest this complication.

The nephrotic syndrome was a serious complication. The mean duration of survival following the onset of nephrosis was eight months. The normocholesterolaemic variant offered a somewhat better outlook.

The 15-minute excretion of phenolsulphonphthalein and the creatinine clearance tests yielded the most useful information in terms of appraisal of renal status.

The anaemia encountered was usually of the normochromic, normocytic type and unresponsive to iron therapy. An acquired haemolytic anaemia was not infrequently encountered.

Elevation of the blood serum gamma globulin was the most frequent electrophoretic abnormality. When the

gamma globulin levels were normal or low, there was usually severe renal involvement present.

A study of throat cultures and antistreptolysin O titres in our group failed to demonstrate more than a coincidental relationship between the beta-haemolytic streptococcus infection and the renal involvement.

The degree of renal histologic damage correlated well with the severity of the clinical manifestations and the ultimate prognosis. The 15-minute phenolsulphonphthalein excretion value correlated most satisfactorily with the renal pathologic findings.

Renal involvement in systemic lupus erythematosus is the least responsive of all the clinical manifestations of the disease. Our study demonstrated that amounts of corticotropin or glucogenic steroids sufficient to suppress the other manifestations of systemic lupus erythematosus had no effect either on the prevention or the amelioration of renal damage.

Guanethidine in Hypertension

PAGE, I. H., HURLEY, R. E. AND DUSTAN, H. P. (*J.A.M.A.*, **175**: 543, 1961) from the Research Division of the Cleveland Clinic Foundation and the Frank E. Bunts Educational Institute give in the following lines the summary of their observations on the results of treatment of hypertension with guanethidine:

The anithypertensive effects of guanethidine seem to result from its ability to depress sympathetic vasomotor function either by decreasing norepinephrine production by nerve endings or by releasing catecholamines from heart and blood vessels.

Guanethidine has proved to be an effective drug for the treatment of hypertension for periods as long as 18 months. Of 38 patients with renal or essential hypertension, reduction of supine diastolic pressure to levels of less than 105 mm. Hg. for weeks or months was achieved by guanethidine in 22 patients; 5 of these developed oedema which was easily eliminated by an orally administered diuretic. Twelve other patients, who originally received guanethidine only, failed to respond satisfactorily but achieved good blood pressure control with additional therapy, either as hydralazine, or an oral diuretic. One patient in whom guanethidine treatment reduced supine arterial pressure to 108 mm. Hg., did not receive other antihypertensive drugs.

Three patients with severe diastolic hypertension were given guanethidine alone at first; in one it caused only an orthostatic hypotension but when hydralazine was added supine diastolic pressure was reduced from 131 mm. Hg to 112 mm. Hg; in the other 2 guanethidine lowered supine diastolic pressure about 25 mm. Hg from levels of 140-150 mm. Hg, and addition of hydralazine had no further hypotensive effect.

To reduce supine arterial pressure to almost normal levels, severe orthostatic hypotension was usually produced during the first weeks of treatment. With reduction in the dose of drug and elastic stockings, it was possible to overcome the incapacitating hypotension without loss of supine blood pressure control.

The only major side-effect of guanethidine was diarrhoea, which was easily controlled with atropine. Tolerance to the drug has not appeared.

Anisotropic Urinary Lipids in the Nephrotic Syndrome

ZIMMER, J. G., DEWEY, R., WATERHOUSE, C. AND TERRY, R. (*Ann. Int. Med.*, **54**: 205, 1961) from the Departments of Medicine and Pathology, University of Rochester School of Medicine and Dentistry, Rochester New York, in dealing with the origin and nature of anisotropic urinary lipids in the nephrotic syndrome observe:

The anisotropic lipid material in urine from patients with the nephrotic syndrome, in the form of 'Maltese cross' spherulites, is apparently composed largely of cholesterol ester with a smaller component of free cholesterol. The labelled cholesterol ester in the urine sediment appeared more slowly than did the labelled cholesterol ester in solution (probably as lipoprotein). These findings suggest that the cholesterol esters, and possibly other lipids, are lost through the damaged glomerulus, are partly reabsorbed by the tubular cells, and are then re-extruded in a particulate form. Thus two distinct lipid phases appear in the urine—one a lipoprotein form in solution from the glomerular filtrate, and one a particulate form in the sediment arising from tubular cells.

Importance of Early Treatment of the Nephrotic Syndrome

HEYMANN, W. AND HUNTER, J. L. (*J. A. M. A.*, **175**: 564, 1961) from the Department of Paediatrics, Western Reserve University, School of Medicine, write:

During a 5-year period 63 children with the nephrotic syndrome were treated with prednisone or triamcinolone (aristocort) or alternately with 1 of these 2 steroids according to a long-term regimen. The 63 patients were divided into 2 groups: (1) 34 children who had been treated within the first 3 months after first noted symptoms of renal disease and (2) 29 in whom therapy was started any time thereafter. The distribution in groups of favourable prognosis was 86 per cent for the former and 52 per cent of the latter ($p=0.025$). Among the early treated cases, 70 per cent needed only one hospital admission. For patients treated more than 3 months after onset this figure was 20 per cent ($p=0.005$); 33 per cent of children treated within the first 3 months after onset needed only one 4- to 7-week course of treatment. Only 10 per cent of children starting treatment later remained free of proteinuria after one course of therapy ($p=0.052$). Individual susceptibility rather than age or sex of the patient, or choice of steroid, seemed to determine frequency and severity of complications.

Hypotensive Therapy in Arterial Hypertension

HODGE, J. V., MCQUEEN, E. G. AND SMIRK, H. (*Brit. M. J.*, **1**: 2, 1961) from the Department of Medicine, University of Otago, Dunedin, New Zealand, give in the following lines the summary of their observations:

The results of hypotensive treatment over a period of eight years are reviewed. There were 497 patients on hypotensive therapy and 156 controls.

The improvement with treatment in the mortality of retinal grade 4 and grade 3 patients is confirmed.

There has been a highly significant (P 0·001) im-

provement in the mortality of retinal grade 2 patients, (all ages) as contrasted with 43 among 88 controls.

The relative loss of life-years during the eight-year period of study was nearly three times as great in grade 2 controls as in grade 2 treated patients.

Even if grade 2 patients presenting with paroxysmal dyspnoea or heart failure are excluded from both treated and control series, the improvement in the mortality is highly significant (P 0·001).

Taking all grades together, despite the predominance of severe retinal grades in the treatment patients there was a reduction in the death rate (as a percentage of patients at risk) from heart failure (P 0·001) and from cerebral vascular accidents (P 0·001) in the patients on hypotensive therapy.

The decreased mortality does not appear to depend upon which particular measures are used to reduce the blood-pressure. The consistent aim of our hypotensive therapy has been to reduce the blood-pressure level of hypertensive patients to as near normal as practicable.

No claim is made for the efficacy of less substantial reductions of the blood-pressure.

Chronic Asthma Treated with Prednisolone and Newer Steroids

PEARSON, R. S. B., BAYLIS, J. H. AND SMELLIE, H. C. (*Brit. M. J.*, **1**: 315, 1961) from the King's College Hospital, London, write:

Short courses of steroids given in tapered doses over eight days are often effective in controlling exacerbations of asthma, though relapses are common.

Long-term steroid therapy may in some cases be maintained with continued benefit for a number of years.

If such treatment is terminated after six months or more the patient shows a tendency to relapse severely and sometimes fatally. Particularly careful supervision is therefore required during the ensuing months.

The newer range of modified steroids, though more potent on a weight-for-weight basis, have little advantage over prednisolone.

Granulocytopenia due to Chlorpromazine

CARFAGNO, S. C. AND MAGEE, J. T. (*Am. J. Med. Sc.*, **241**: 87, 1961) from the Department of Medicine, Norristown State Hospital, Norristown, Pennsylvania, give in the following lines the summary of their observation on 11 cases showing granulocytopenia:

Eleven cases of granulocytopenia due to chlorpromazine therapy are reported. It was found that the duration of therapy and size of dose varied and was not necessarily a factor in the production of granulocytopenia. The clinical picture was characterised by fever, pharyngitis and prostration. Two cases presented with pneumonitis and one with an acute abdomen. Therapy consisted of general supportive measures, antibiotics, steroids and blood. Seven of the 11 cases survived. We were unable to correlate the survival with any specific factor in therapy. The importance of close observation for fever, pharyngitis, and deterioration in the clinical appearance of patients receiving chlorpromazine therapy as a means of early detection of a granulocytopenia is emphasised.

CURRENT TOPIC

IMMEDIATE PROBLEMS FOR MEDICAL EDUCATORS*

JOSEPH T. WEARN, M.D.

Consultant in Medical Affairs, Harvard University Medical School, and at Western Reserve University, Cleveland, Ohio

The honour of being asked to give the third Alan Gregg Lecture is a great one indeed. There is a further and deep meaning for me in that he was a friend, from the days when we were in medical school together to the time of his death. Through more than 40 years we had many visits, always with informal, fruitful discussions of policies, problems, and men, wide-ranging at times, and especially in the fields of research and patient care. The warmth of his personality and his readiness to give of his time and counsel, I am sure, have been experienced by many of you.

One of Alan's favourite ways of opening an informal discussion with an individual or a group was to present a problem and ask for opinions, but he rarely let the chance go by to express his own.

Tonight I propose to mention a few pressing problems that are facing medical educators, and present my views on three of the most important ones.

It is not necessary for me to tell you that it is lack of time, not lack of problems, that leads to this limit of three. During the first quarter of this century the union which was consummated between medical schools and the universities resulted in a golden age of medical science and rapid developments in both our preclinical and clinical departments.

Whole groups of diseases have disappeared, either through prevention or effective therapy. Our more profound understanding of basic mechanisms has made possible great improvements in medical care. Our teaching wards are now populated by much older patients, and their diseases are preponderantly chronic in nature. The spectrum of disease available on the wards for teaching is growing steadily narrower, and even the occupancy rate of ward beds in our teaching hospitals is declining.

Since World War II there has been a phenomenal growth in the volume of research, in the construction of research facilities, and in the traineeship programs for research personnel. Indeed, the status of research is such that our young men cannot be blamed if they believe it is now the principal avenue to academic advancement.

During these same years when medical educators have been devoting so much energy to scientific research, patterns of medical care have been changing rapidly. Health services have become increasingly complex because of the trend to more and more specialisation in medicine and the entry of disciplines, outside

*Third Alan Gregg Memorial Lecture presented at the 71st annual meeting of the Association of American Medical Colleges, on October 31, 1960.

of, but related to medicine, into the health field. Communication between the general physician, the various medical specialists, and the other health disciplines, is often difficult.

Medical schools, then, are beset by problems. I have only mentioned some which are familiar to all of you. My purpose is to emphasise that the time has come when medical educators must face their responsibilities, define their goals specifically, and set an orderly course toward them. If we fail to take the helm and steer a clear course, others will be only too ready to seize the initiative. With this in mind, I propose to discuss three problems which, because of their importance and scope, call urgently for our careful attention. These are (*a*) the adaptation of medical education to our expanding scientific knowledge, (*b*) the delicate balance of research with teaching and patient care, and (*c*) the relation of university medical centres to medical care for the whole community.

The Adaptation of Medical Education to Expanding Scientific Knowledge

Because the mass of medical knowledge is steadily increasing it is generally agreed that complete coverage is beyond the capabilities of faculty and students. Educators have been forced to pay more attention to selection of curriculum content and to more efficient methods of presenting what they consider essential. To any one faculty member, abandonment of complete coverage is acceptable if it means that the time allotted to his colleagues is cut in order that he may have more for the presentation of his own subject. For students, abandonment of coverage is often a source of frustration and anxiety, because unhappy specialists keep telling them they are not learning all they need to know; but this is probably no worse for them than their uncertainty as to just which "essentials" they should select from the overwhelming mass which is presented when all their teachers, without any restraint, make their specialised demands upon them.

Time is precious for both teacher and learner. We must recognise the importance of defining our requirements and our objectives, and of devising more adequate methods for appraisal of both teacher and student performance.

The defining of absolute essentials, especially for students in the first 2 years, is of prime import. The faculty is certainly better qualified for this selection than the students. We must recognise that either the teacher provides a definition on the basis of his knowledge and experience, or the student without experience guesses at what is essential. What one hopes for is that spoon feeding can be avoided by the wise instructor who can guide the student in the selection of the essentials on which to focus his main effort, and then can inspire him to use his own initiative and enthusiasm in pursuit of advanced knowledge in areas where the student has special interest and aptitude.

If essentials can be reasonably defined, there should be a change in the appraisal of student performance. The word "essentials" implies that the student must master 100 per cent, not 60 or 75, before he is advanced to greater responsibilities. Once the student has mastered the clearly defined essentials, opportunities should be available to encourage the more able students to develop and go as far beyond the minimum requirements as their capacities permit.[1]

It has long been the goal of medical educators to send out graduates who would continue their studies and keep abreast of advances in their profession. It now becomes imperative that we instill into students not only the necessity, but also a real desire, to continue their learning, and it follows that, in order to accomplish this, they must have acquired sufficient scientific critique to select wisely from the ever-increasing mass of knowledge.

How can these problems be approached? How can teachers stimulate in students a continuing desire to learn? Perhaps this might best be accomplished by taking a leaf from the book of those responsible for the magnificent advances in scientific medicine over the past half century. What we need is a clear definition of our problems, suitable methods for data collection, accurate observations, and controlled study to test the hypotheses which we formulate. In short, more research in medical education is greatly needed. It is already under way in some schools, and, in at least two, Divisions of Research in Medical Education have been set up. Perhaps the most effective stimulus to the medical schools in recent years has been the leadership of the Association of American Medical Colleges. Its studies of these problems, of the medical student and his progress through medical school, and the Teaching Institutes have set an admirable example. The Association's success in bringing medical educators together for intimate discussion of educational problems is a great tribute to the officers and staff. The investigative road in medical education will not be a smooth one, because methods must be devised, controls are difficult, and medical faculties have long enjoyed the reputation of being resistant to change. However, the factual presentation of the results of studies in medical education will stimulate others to investigate, and eventually we may even hope for objective and constructive criticism in this field, which is not altogether common today. Some of our best pre-clinical and clinical scientists, whose objectivity is unquestioned in the laboratory and in their presentations of their work, lose all trace of that objectivity when they discuss educational problems and exhibit a degree of emotional bias that would do credit to a Maine Republican or a South Carolina Democrat.

University schools of education, technical schools, and liberal arts colleges are facing the same problems and are actively searching for methods of appraisal of teacher and student, but in some areas medical education is as far advanced as any. If we can keep and cultivate our capacity for research and submit our activities to constant reappraisal by means of a carefully planned research programme, we can hold our position, move

[1]My colleague Dr. John L. Caughey has written in more detail on this subject (*J. M. Educ.*, **34**: 581, 1959).

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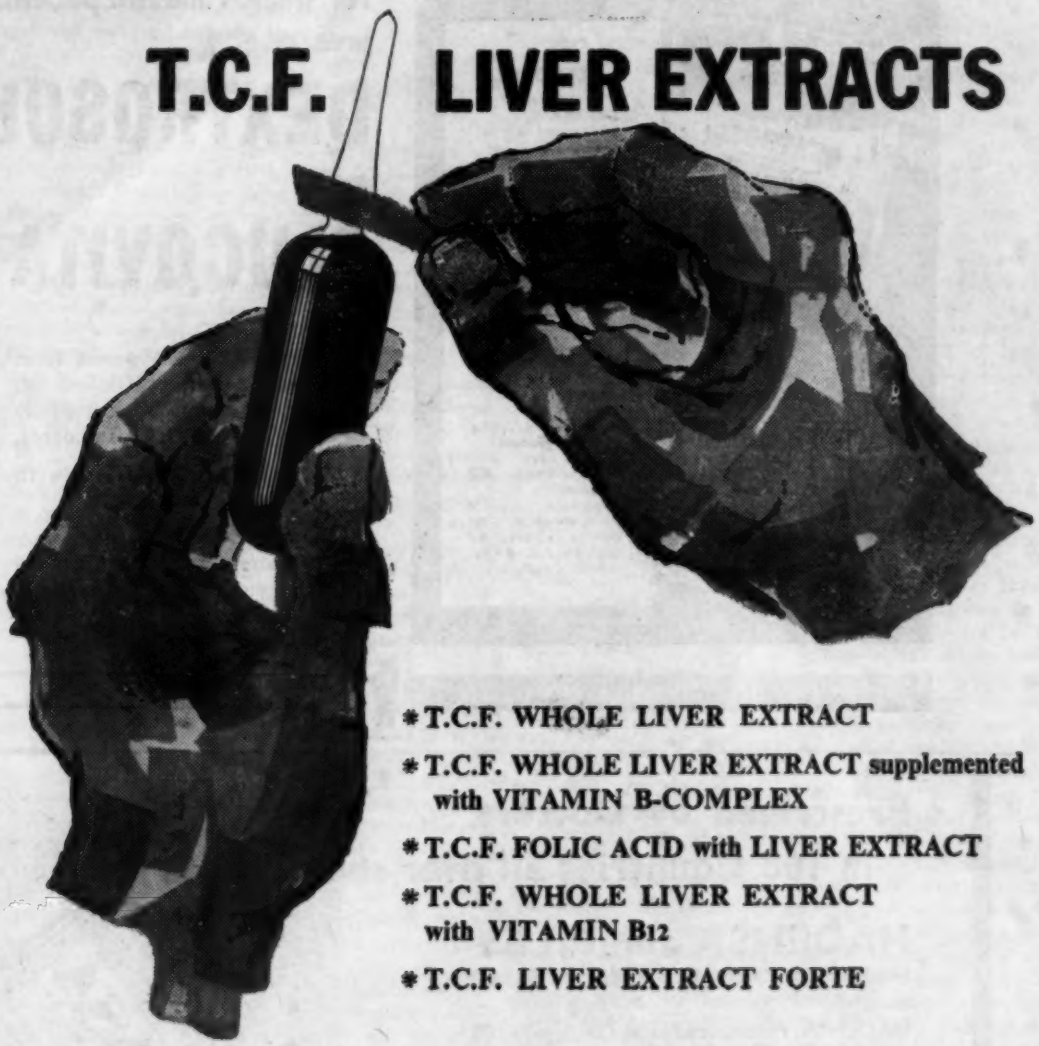

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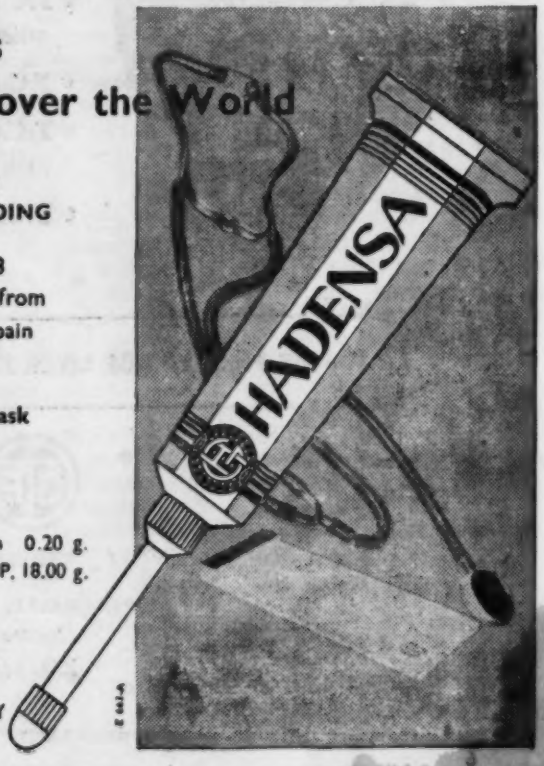

ahead, and perhaps even contribute to the solution of educational problems in other fields.

The Balance of Research with Teaching and Patient Care

Since World War II the budgets for research in our medical schools have increased at an astounding rate. New scientific journals have been established, and many of the older ones have increased their size. Numerous research training programmes have come into being, and research fellowships have multiplied rapidly. You are well aware that this great increase in research and in training of investigators has been made possible to a considerable extent by financial support from the Federal Government. Fortunately for the medical schools, the policies of administering these enormous programmes have been wise ones from the beginning. The governmental agencies have selected their advisory committees almost entirely from the faculties of the country's medical schools, and these agencies are to be congratulated on their convincing demonstration that the government can finance such large programmes without unnecessary controls. This is a blessing, but it carries with it temptations which have been so well described recently by Dr. A. N. Richards[3] that I shall quote his remarks to you: ". . . ready access to abundant research funds is associated with subtle temptations not easy to recognise and resist.

"Those are the temptations to ask for more than is needed or justified; to over-estimate the influence of volume of results, perhaps at the expense of quality; to delegate too much of the work to assistants or technicians and thus for the investigator to be deprived of opportunity of seeing the chance breaks which nature so frequently yields. There is also the temptation to shape the plan of research to suit what are believed to be the aims of the granting agency or to the peculiarities of expert advisers; the temptation to forget that a reasonable degree of austerity is a wholesome stimulant; that excessively elaborate equipment can convert the investigator into a technologist and may obstruct his direct vision of the living system which he studies and of its beauties; that discoveries are usually made, not by teams, but by an individual, lonely and tormented by a passion to break through the blank wall which stands in the way of his understanding."

An estimate of the possible continued growth of research in the future is to be found in the 1958 report on "The Advancement of Medical Research and Education" by the committee under the chairmanship of Dr. Stanhope Bayne-Jones, which envisions an increase in funds for medical research from $330 million in 1957 to one billion dollars by 1970. This means, of course, that research facilities must be greatly augmented and that the necessary research workers must be trained to man this programme. What does this mean to the medical educators in this country? It is generally admitted that rapid growth of almost any research project beyond a given size tends to make it more and more unwieldy, more difficult to administer, and less efficient. There is grave doubt that growth in quantity of research is desirable unless it is possible to assure that there will be maintenance of quality, or better still, an improvement in quality of the research. The present medical schools must expand their facilities or new medical schools must be built to make the suggested increase of research possible. The task will fall squarely on the shoulders of medical schools. This immediately poses the question whether we are prepared to meet this challenge. Do we now have or can we mobilise an adequate research staff for such an increase? Are we in a position financially to undertake this task? And of equal import, will this additional growth of volume of research completely upset that balance of teaching, medical care, and research that is so essential in our schools today? Before answering the staff question, one must look carefully at the distressing number of vacancies that exist in medical faculties today. As long as key teaching positions remain unfilled one must question the wisdom of attempting expansion, lest standards be sacrificed. It is not my intention to say that this can or cannot be accomplished. Each school must appraise its own desires and capacities for expansion of its research volume. The availability of large sums of money for research should certainly not be the sole determining factor. It is imperative that we begin immediate planning, define our responsibilities, and take steps to meet them. This Association enjoys the confidence of the schools and can furnish the necessary leadership, but it will need the unified support and unstinted effort of the medical educators of this country to deal with this problem successfully.

In considering the financial position of medical schools it might be said that, by whatever formula used, it has been shown that medical schools lose money on all research contracts that do not cover all direct and indirect costs. Hence, the greater the research budget, the greater the drain on the free funds of the schools, or in plain words, the greater the deficit. As you are aware, the officers of this Association have waged a steady battle to persuade the Congress to meet this issue and support both direct and indirect costs of research. Progress has been made, but the question is not yet settled, and until it is the wisdom of increasing medical school deficits may well be questioned.

We must also consider the desirable balance of teaching, medical care, and research. This is frequently referred to in terms of the three-legged stool, of which all three legs are essential if the stool is to stand. We must remember that, if one leg is allowed to grow inordinately at the expense of the others, the balance is destroyed. A sound, productive research programme is a *sine qua non* for a living medical school, but its value can be questioned if its growth becomes uncontrolled at the expense of quality or at the expense of teaching and care of patients. In short, if an increase in the volume of research is to occur, then let us plan carefully for staffing, for facilities, and for financing it, but at the same time control it so that its growth is reasonable in relationship to its environment.

[3] A. N. Richards. Remarks made at the dedication of The Alfred Newton Richards Medical Research Building (*Bull. Univ. Pennsylvania*, 1959).

Medical Care for the Whole Community

The third problem that calls for more intensive study on the part of medical educators is that of whether we are meeting our responsibilities in educating the physician adequately for his role in health service to his community.

In the earlier days of this country practically all medical school faculty members were in the closest touch with community needs in health care, because they themselves were the leading practising physicians of the community. However, as the medical schools have allied themselves with universities and with university hospital centres, the emphasis has shifted, and full-time positions have been created which have permitted and encouraged clinical teachers to devote themselves to research at the preclinical and clinical levels. This brought new life into the schools and resulted in the great increase in medical knowledge which has made it possible for this country to have the highest standards of medical care.

As more full-time research and teaching positions became available in clinical departments, these faculty members gradually lost their intimate association with the patterns of health service in the community. There is no doubt that the practice of these full-time men is often of the highest quality and exceptional in its ability to deal with the most complex medical problems; but insofar as it is dependent on the unique facilities of the great medical centre, it is isolated from practice in the community.

By evolution, therefore, academic medicine has actually become a specialty itself and competes with other areas of medicine in trying to attract young physicians to it. This is natural and desirable as long as the academic medicine specialists have, and impart to their students, an appropriate respect for the pursuit of excellence in other careers in medicine, and as long as they use with self control the enormous advantage they have because they control access to all careers in medicine, not just access to their own specialty.

What we must ask ourselves, then, is whether in pursuing our own specialty of academic medicine we are keeping in close enough touch with the fast changing potterns of health service in the community. We must consider whether medical faculties, intent upon their own research, teaching, and care of patients in university hospital centres, have become less familiar than they should be with all the other aspects of health service for which their students after graduation must eventually assume responsibility.

Inasmuch as this is an educational problem in medicine, there can be no doubt that the obligation for its solution lies with medical educators. Lay groups are becoming increasingly interested in these problems of health service, and are already active with plans of their own.

It behoves us, therefore, to face this problem without delay, to shoulder our responsibilities, and to plan to meet them. Fortunately, we do have some evidence that research techniques can be applied to studies of methods and patterns of medical care. Medical educators must see to it that these techniques are applied objectively and that the results are used as a basis for planning improved educational programmes.

If we keep before us the fact that, as medical educators, we teach today the physicians not of tomorrow but of the next several decades, we will see that we must plan far ahead in order to equip our graduates to meet the challenges which will result from continuous increase in medical knowledge, from changing patterns of medical care, and from unpredictable economic and social progress. We must accept our responsibilities unequivocally, define our goals, and set our course. Above all, we must keep and cherish the capacity for change which has enabled medical education to adapt to vast changes in its capabilities and opportunities.

Today the battle to create a scientific foundation for medicine, to which Alan Gregg contributed so mightily, has already been won. Our greatest challenge is to develop educational programmes and health service mechanisms which will assure that the products of our expanding scientific research will be applied promptly and effectively, in comprehensive care of patients in every community, not just in our most elaborate university medical centres.

This is the concept of Great Medicine with which Alan Gregg challenged this Association when he addressed its Annual Banquet in 1952. The challenge is still before us, the need to meet it is urgent, but our time is running out.

—Reproduced from *The Journal of Medical Education*, **36**: 113, 1961, by kind permission of the author.

NOTES AND NEWS

Secretary General of World Medical Association

Dr. Harry S. Gear, an eminent international medical leader in the field of Hygiene and Tropical Medicine will become Secretary General of The World Medical Association on July 1, 1961. Dr. Gear is currently the Director of Pneumoconiosis Research, Council for Scientific and Industrial Research—Industrial Medicine in Johannesburg, South Africa.

Dr. Gear is a member of numerous voluntary organisations, a fellow of the Royal Statistical Society and Royal Society of Health and a member of the Royal Institute of International Affairs, London. He is the author of a number of books and monographs in the fields of epidemiology, health statistics, industrial health and medical research. More than seventy of his technical and professional papers have appeared in various medical and scientific journals in Europe, Canada, Africa and internationally.

New W.H.O. Appointment

Dr. G. Sambasivan has been appointed Senior Regional Malaria Adviser in the South East Asia Region of the World Health Organisation.

Dr. Sambasivan, an Indian national, received his medical education at Madras University and at the School of Tropical Medicine, Calcutta.

During the past 12 years he has served as WHO malariologist in Thailand, the Philippines, Brunei, Burma, Afghanistan and Indonesia. He has also visited malaria eradication programmes in Central America and in Europe. Dr. Sambasivan is aged 54 and is unmarried.

Eleanor Roosevelt International Cancer Fellowships

The International Union Against Cancer, through funds made available by the Eleanor Roosevelt Cancer Foundation, will award annually fellowships for research on cancer. These fellowships have been created in the belief that the international exchange of scientists between centres with kindred interests will facilitate the sharing of knowledge and thereby contribute to the control of cancer.

These are senior postdoctoral awards designed for the support of persons who, as full-time members of the staff of universities, teaching hospitals, research laboratories or other institutions, have demonstrated interest and outstanding ability or promise as independent investigators in the field of research on basic cancer, its experimental and clinical aspects, and who wish to broaden their experience by a period of study in another country. The duration of the fellowships ordinarily will be one year but this period may be extended or shortened in special circumstances. The stipend will be based on the current salary of the applicant and the salary of persons of comparable qualifications in the place where the applicant expects to study. An allowance will be made for dependants and for costs of travel to and from the fellow's residence and the institution where he will work.

Application forms and additional information may be obtained from International Union Against Cancer, P.O. Box 400, Geneva 2 (Switzerland).

International Post-Graduate Medical Course

The XX International Post-Graduate Medical Course will be held from September 18-25, 1961 in Karlovy Vary (Carlsbad), the world famous spa with a tradition of over 600 years.

The main subject of this Course will be diabetes mellitus. In addition free themes will be discussed. Papers will be read by leading research workers from different countries.

Further information from the Czechoslovak Society of Physical Medicine, Albertov 7, Praha 2.

Students Health Home, Calcutta

On a plot of land allotted by the Corporation of Calcutta near the crossing of Dharmatolla Street and Acharya Jagadish Bose Road, the Students Health Home (at present situated at 44/1 Creek Row, Calcutta) has recently started the construction of a hospital exclusively for the use of student patients. When completed, this eight-storeyed Student-Hospital, the first of its kind in India, will include thirteen examination clinics, two laboratories, a surgical theatre, and an observation ward for out-patients, together with accommodation for about a hundred indoor patients. The Hospital will provide up-to-date medical facilities for student-members of the Home free or at nominal rates. The central idea was simple yet daring, by paying a rupee annually, the student would become part of an organisation providing medical facilities for its members out of a common pool made of small individual contributions. The Students Health Home has issued an appeal to contribute liberally towards this humanitarian cause, and particularly towards the construction of this new building.

Herb Rediscovered

The world-renowned Lakshmana herb, untraceable for a few centuries, has been rediscovered in northern India.

The root of this plant, called Devil's Apple in Europe because of its resemblance to a male child, is used in the Ayurveda for rejuvenation.

Alembic's New Plant to Make Penicillin V

Union Home Minister Shri Lal Bahadur Shastri inaugurated Alembic's Rs. 90 lakhs' worth antibiotic plant on April 14. Besides other things, the plant will produce orally more effective Penicillin V and broad-spectrum antibiotics and vitamins by fermentation.

This is claimed to be the first plant made in India by Indians and out of the total outlay of Rs. 90 lakhs on the plant, component of the plant imported is only Rs. 20 lakhs.

Polio Epidemic in Krishna District

It is learnt that the Central Government had contacted World Health Organisation for adequate supply of polio vaccine which was in short supply in India. According to latest information, there were 350 cases of polio in Krishna and Guntur districts with 15 deaths.

Pharmacy Council on Further Training

The West Bengal Pharmacy Council meeting at Darjeeling on 31-3-61 decided to go ahead with the work of higher training in pharmacy in Calcutta or at any other place in West Bengal. The creation of a Directorate of Pharmacy in the State Health Department to harmonise the work of the pharmacists was also decided.

The Council suggested improved pay-scale for pharmacists as recommended by the Pharmacy Inquiry Committee of India to draw better talents to the profession. It felt the need for imposing the relevant section of the Pharmacy Act of West Bengal as there were already more than 13,000 registered pharmacists in the State.

Extensive cultivation of medicinal plants in the hill regions of West Bengal not only to make the country self-sufficient in drugs and medicines but also for export and earning foreign exchange was suggested.

Milestone in Medical History of Maharashtra

Maharashtra's Minister of Health, Shri Homi J. R. Taleyarkhan, inaugurated the State's first Cancer Diagnostic Centre at St. George's Hospital, Bombay, on 29-3-61.

Cancer, Mr. Taleyarkhan said, was one of the big medical problems facing the country. It was delay in treatment that made the disease fatal in most cases. The Government of Maharashtra was doing everything to make the people realise the importance of an early check-up to control and cure the disease. The new centre was aimed at this purpose.

Public Health in Madras

Dr. N. Parthasarathy, Director of Public Health, Madras said recently that the Madras State Government had formulated 19 schemes under Public Health during the Third Plan period, at a cost of Rs. 300 lakhs. One of the schemes was the immunisation of pre-school age children between the age of one and five against diphtheria, whooping cough and tetanus.

The Director said that another measure was the eradication of yaws, a disease peculiar to lower classes of people in Avinasi and Palladam taluks of Coimbatore district. The treatment was simple and very successful with one or two injections.

The Director added that the anti-malaria work which was being carried on in the State had done very well. Dr. A. P. Ray, Director of National Malaria Eradication Programme, New Delhi, who visited this State recently had remarked that the work which was being carried on in Madras State compared favourably with the work of its kind with foreign countries and had given the top place for Madras State in the list of States which were implementing this scheme.

Health Boards in Andhra Pradesh

The Andhra Pradesh Government have under consideration a proposal to set up Health Boards at the district and block levels.

According to Mr. P. V. G. Raju, Minister for Health and Medical Services, these Boards would decide upon the pattern of industrialisation and demarcate industrial and non-industrial areas. It would help the Health Department to dispose of applications for starting industries.

Leprosy Control in India

Dr. R. V. Wardekar, Secretary, Gandhi Memorial Leprosy Foundation, Wardha, stated recently at Rajahmundhry that the Government of India had accepted the principle of survey-education-treatment as the principal method of leprosy control.

Addressing the Rotary Club on 7-4-61 he said that in one of the nine units set up under the foundation in Chilakalpalli, near Bobbili, in Andhra, there was a training centre for paramedical workers and the pattern of this training centre had now been accepted by the Government of India with a view to introducing similar centres in all States in which leprosy was endemic during the Third Plan.

New Process for Malted Milk Powder

An improved process for the production of nutritive and palatable malted milk powder and allied products has been developed at the Central Food Technological Research Institute in Mysore. The new process makes use of solid powder, such as malt extract and milk powder, as base material instead of fresh milk and malt liquor. Production is thus facilitated since the amount of water to be evaporated for preparing the product is reduced.

The base materials required in the new process are ragi, jawar, barley, wheat and milk which are easily available in the country.

Training of 'Medical Assistants'

A scheme for the training of 'Medical Assistants' is under the active consideration of the Central Government, Mr. D. P. Karmarkar, Minister of Health disclosed in the Lok Sabha on 7-4-61.

Shri Karmarkar, who was replying to questions in the House, said that Medical Assistants were not intended to function as doctors but as assistants to them. As regards the training to be imparted to them, it would be more or less the same as for sanitary and public health personnel.

Shri Karmarkar said that the question of reviving a Licentiate Course in Medicine had been left entirely to the States. He said that the paucity of medical personnel existing at present would disappear when the medical students of the 60 colleges in the country qualified themselves.

Control of V.D. and Yaws

A three-day conference on venereal diseases and yaws attended by about fifty delegates from all over India opened at Simla on 7-4-61.

Mr. Bhajrang Bahadur Singh, Lt.-Governor of Himachal Pradesh, inaugurated the conference which is the first of its kind to be held on an all-India level.

The purpose of the conference, in the words of Mr. D. P. Karmarkar, Union Minister of Health, who addressed it after Mr. Singh's inaugural speech, was to review the progress so far achieved in the V.D. and yaws control programmes and to chalk out future plans.

Shri Karmarkar said that while the necessary awareness of urgency of tackling many other communicable diseases had been aroused, an attitude of laissez-faire still persisted towards venereal diseases. He called for a change in this attitude so that the necessary resources and efforts would be forthcoming to fight this scourge. He also stressed that voluntary social service agencies could play a very important role in the implementation of V.D. control programmes.

As far as yaws was concerned, the Health Minister said that it was prevalent in contiguous areas of Andhra Pradesh, Madhya Pradesh, Maharashtra and Orissa. There was evidence that there were isolated "pockets"

elsewhere in the country but the disease was now easily controlled and could be eradicated.

Lt.-Col. V. Srinivasan, Director-General of Health Services, in the course of his address, suggested the constitution of a Central V. D. Advisory Committee which should assess the results achieved so far and prepare schemes for controlling.

Proposed Herbariums for Medicinal Plants

Three herbariums are proposed to be started by West Bengal Government, one each at Kalyani, Cooch Behar and Rango (Darjeeling) for growing Ayurvedic medicinal plants.

At Kalyani about 300 acres of land has been acquired for the purpose. At Rango the Government has extensive cultivation of ipecac and other medicinal plants. This plantation is proposed to be further expanded during the Third Plan period.

Spread of Leprosy in Asansol

A recent sample survey by the Mines Board of Health shows that the incidence of leprosy among students in the Asansol area, which was already high, has increased further and is now over 1·1 per cent.

The survey team found 158 boys and girls in schools suffering from leprosy. Most of the cases were non-infective though one instance of a highly infective girl student who had been regularly attending classes was detected. The incidence among boys was 1·3 per cent while that among girls was 0·6 per cent, but proper examination of girls could not be made as there was only one lady doctor.

The survey was conducted in mining villages, factory colonies and educational institutions. A total number of 5,102 cases of leprosy comprising 3,659 male and 1,443 female sufferers was found.

Association of Dermatologists and Venereologists, Bombay

The 13th annual report of the above association shows that there were 31 members on the roll consisting of 10 Life members, 13 ordinary members and 8 Associate members.

The Association held 8 clinical meetings during the year.

Special meetings also were held under the joint auspices of the Association and the Indian Medical Association, Bombay Branch. Dr. G. Stuttgen, Prof. of Dermatology, Academy of Medicine, Dusseldorf and Member of German Council of Allergy, delivered a lecture on Biochemical Evaluation of Anti-Allergic Treatment, at G. S. Medical College, on 12th February 1960.

Dr. Wilson, Prof. of Dermatology, University of South California and Los Angeles and a very prominent member of the South American Dermatology visited Bombay from 2nd to 6th October 1960. The following Academic and Social programme was arranged during his visit: (a) Symposium on Fungous Diseases of the Skin, Hairs and Nails at K. E. M. Hospital, (b) Clinico-pathological Conference at K. E. M Hospital, (c) Dinner at Willingdon Sports Club, (d) A lecture on Some Recent Trends in Dermatology at Topiwala National Medical College. These functions were held jointly with the Indian Medical Association, Bombay Branch.

Corporation for Drug Plants

The Union Government will soon set up a corporation with an authorised capital of Rs. 15 crores, to run four drug-manufacturing units in the country with Soviet assistance, Union Home Minister Shastri announced at Baroda on 14-4-61.

The new units, proposed to be set up under rouble credit arrangement with the Soviet Union, are: penicillin plant at Rishikesh with a capacity of 140 million mega units, sulpha drug plant at Hyderabad, phylochemical plant in Kerala and sulpha plant in Madras.

The plants, it was stated, were expected to go into production in the next two years. Their annual estimated production would be worth Rs. 35 to Rs. 40 crores.

CORRESPONDENCE

The Editor is not responsible for the views expressed by correspondents

Medical Services in States

SIR,—Medicine is fast developing. There has been a great advancement in the field of surgery. New methods, techniques and better understanding of the different diseases has laid open a wide scope for detailed surgical procedures. A general physician or surgeon is not able to cope and keep uptodate with all the advances in all the sections of his subject. Each particular part of the body requires a thorough understanding and detailed study; and a specialist is better placed to deal with it.

The medical services of the States need reorganisation, suited to the present stage of advancement of medical sciences. It has become imperative that the civil hospitals should be able to give specialist treatment to the ailing public. The good old days have passed when one medical officer was the master of the whole show. He cannot keep himself abreast with the advances in all the special fields. If the patient is not able to get the advantage of the advancement and better development of medical science, he is not having a square deal.

The reorganisation should also be such that the services of the present members of the service are utilised to the maximum and they are not put to any hardship.

The Government has taken a step towards the introduction of specialist services in the district and divisional hospitals but due to the mixture of the old and new and lack of clear instructions, great confusion has occurred in most of the centres. The specialist has not been able to do justice to the work to which he has been assigned. Even today the controlling authorities are not clear themselves, especially with regard to the fact that these specialists, which they have posted, are really to work as specialists or it is just a mere show. They still expect every one to do everything.

The medical services in the State are provided at the following levels:

1. Divisional Headquarters, 2. District Headquarters, 3. Tehsils, and 4. Towns and villages.

The civil hospitals at divisional headquarters should be equipped with all the facilities of special treatment. All the patients requiring specialist treatment should be referred from all over the division to these hospitals.

The following staff is necessary: 1. Surgical section—(a) General surgeon, (b) Thoracic surgeon, (c) Orthopaedic surgeon, (d) Ear, nose and throat surgeon, (e) Anaesthetist; 2. Medical section—(a) Physician, (b) Cardiologist, (c) Paediatrician, (d) Dermatologist; 3. Ophthalmologist; 4. Dental surgeon; 5. T. B. specialist; 6. Pathologist; 7. Radiologist.

Blood transfusion service should be available. This will cater to the needs of the whole division. Histopathology may also be done if feasible, otherwise tissues are to be sent to the provincial pathologist.

The facilities for ECG, arteriography and specialised type of x-ray work in addition to routine skiagraphy will have to be provided.

The seniormost specialist is also to work as superintendent in addition to his duties. The civil surgeons, who are specialists, can be posted as superintendent *cum* specialist without any detriment to their grades.

The civil surgeons of the divisional headquarters will have no control over these hospitals. He will be the medicolegal officer and medical head of all the other allopathic dispensaries and services of the district.

The senior or postgraduate P.M.S. II officers are to be posted as resident surgical and medical officers. Hence surgeons and physicians are to be employed. These hospitals should be recognised for the purposes of residential qualifications for the postgraduate diplomas and degrees.

The casualty department is to staffed with P.M.S. II officers. The standard of work in these hospitals will be of the medical college level.

The following staff is needed for hospitals in the district headquarters:

1. Surgeon, 2. Physician, 3. Pathologist, and 4. Anaesthetist.

The civil surgeon will be the superintendent of the district hsopital, medicolegal officer and medical head of all other allopathic units of the district. Senior or postgraduate P.M.S. II officers will be posted to work as resident surgical and medical officers. The other P.M.S. II officers will look after the casualty work.

Any case, which cannot be dealt with at the district headquarters will immediately be transferred to divisional headquarters in hospital transport.

The bigger and important tehsil hospitals should be provided with P.M.S. I. officers, or senior or postgraduate P.M.S. II officers.

All the cases requiring treatment beyond the scope of the tehsil hospital, should immediately be transferred to district or divisional headquarters as the need may be.

The P.M.S. II officer will be posted in town and village hospitals. The cases requiring specialist treatment should be sent to district or divisional headquarters.

There should be pooling of the clinical materials from all the hospitals. The specialist and senior medical officers should be encouraged to write papers and report academic and interesting cases in journals. A complete reference library with all medical and surgical journals should be available at the divisional headquarters. Seminars should be arranged quarterly at these centres.

The higher controlling authorities should always give due importance to the academic and clinical aspects of the service personnel. The medical services should not be dealt with in the same way as other non-technical services. Efficiency and professional and clinical acumen should be given due and primary importance.

The above is only an outline; only basic principles have been mentioned. The details and the facilities at each level and in each section will have to be worked out.

I am etc.

Uttarkashi, U.P. (Dr.) RATAN LAL AGARWAL.

Anaphylactic Shock Following Parenteral Antihistaminic

SIR,—More and more cases of anaphylactic shock following penicillin therapy are being encountered these days. It is a matter of regret that antihistaminic agents, used to counteract hypersensitivity reactions, should themselves give rise to anaphylactic shock when administered to counteract or prevent such untoward reactions as mentioned above.

A woman, aged 55 years, developed allergic manifestations like urticarial rash, itching all over the body, etc., for two days. She was given synopen 2 ml. parenterally and was advised to come again the next day. A few hours after the injection the patient was in anaphylactic shock. She was dyspnoeic, the blood pressure was below normal and the pulse feeble. Adrenaline (1 :1000) 0·5 ml., I.M. and coramine, 2 ml., were given and other antishock measures were adopted. The patient improved gradually.

Another patient was getting normal saline by intravenous drip after the addition of synopen (2 ml.). A few hours later, the patient started getting rigors. The rigors were controlled by administering synopen parenterally. In this instance, it is difficult to assess why synopen was unable to control the rigors initially (mixed in normal saline bottle). I leave this problem for the readers to solve.

A case of severe anaemia was receiving blood transfusion (blood mixed with synopen 2 ml.). After an hour or so, she started getting rigors. Synopen was injected parenterally but the rigors could not be controlled.

Any drug may give rise to unwanted reactions.

Cases where the drug is tolerated for a few days may suddenly astonish the physician by producing side effects. I think in almost all such cases the skin sensitivity tests are usually negative.

I am, etc.,

Hyderabad. G. G. PADMA RAO.

REVIEWS

Outline of Fractures—By John Crawford Adams, M.D. (LOND.), F.R.C.S. (ENG.); Third Edition 1960, E. & S. Livingstone Ltd., 16, 17, Teviot Place, Edinburgh; 8¼"×5¼", pp. viii+268; 27s. 6d.

This handbook is already popular in India amongst students for the qualifying examination, house surgeons and general practitioners for whom it is intended. The publication of 3rd edition since its first appearance in 1957 is proof of this popularity.

To deal with the whole range of fractures and joint injuries except those of the skull and face within its limited space in such a masterly fashion is highly creditable and is desirable now-a-days because of the ever widening medical curriculum.

Conservative method of closed reduction of fractures in general is advocated rightly. Definite indications for operation where desirable are also stressed.

An undertone of dogmatism in the choice of methods of treatment permeates the work as might be expected from an exponent like Mr. Adams and is good for beginners who have to diagnose and manage fractures and joint injuries.

The get-up and the 241 illustrations are excellent. A summary of treatment and the index at the end add to the usefulness of the book.

K. S. BOSE

Dermatology—Diagnosis and Treatment—Edited by Marion B. Sulzberger, M.D., F.A.C.P; Jack Wolf, M.D. and Victor H. Witten, M.D.; with the collaboration of Alfred W. Koff, M.D.; Second Edition 1961; The Year Book Publishers Inc., 200 East Illinois Street, Chicago 11; 9"×6", pp. 615; $14.00.

The second edition of this book is vastly improved, enlarged and practically rewritten version of its previous one. This is a practical and modern work on the recognition and management of common skin diseases. The management and treatment with formulary have been discussed and written in detail. The chapters on general dermatologic management, antibiotics, sulphonamides, corticosteroids and adrenocorticotropin are thoroughly discussed, instructive and useful.

The beautiful get-up of the book and a good number of fine illustrations have made the book more attractive.

Dermatologists, general practitioners and postgraduate students in dermatology will find the book useful.

A. N. CHAKRABORTY

OBITUARIES

Dr. S. S. Rao

Dr. S. S. Rao was born on 10-6-1894. He studied in the T. D. High School, Cochin and Maharaja's College, Ernakulam and joined the Medical School at Madras. He completed medical studies in 1917.

Dr. Rao joined Madras Government service as a Sub-Assistant Surgeon, but soon gave it up and started private practice in Cochin in 1919. In 1926 he started the Navaratna Pharmacy (now known as Navaratna Pharmaceutical Laboratories) and was associated with the Mattancherry Municipal Council for a number of years. He was nominated as a member of the Legislative Assembly in 1943, was a member of the Madras Medical Council and was closely associated with organising the Medical Association in Kerala. He was the President of the Kerala State Branch of the Indian Medical Association in 1957-58, and was also the representative of the Kerala State Branch of the I.M.A. to the Central Working Committee. He was Vice-Chairman, Cochin Local Branch of the Kerala State Branch of the Indian Red Cross, Ernakulam, President of the Cochin Branch, Indian Medical Association.

A keen Rotarian, Dr. Rao was President of the Rotary Club of Cochin, and was a very active Mason and held distinctive positions in the masonic cadre. He worked for many years as the Hony. Secretary of the Indian Chamber of Commerce; Director of the Cochin Electric Co., Private Ltd., Cochin; Director Hindusthan Insecticides Ltd. (a Government of India undertaking).

Dr. Rao died suddenly on February 21, 1961.

DR. S. S. RAO

DR. R. P. DUBE

Dr. R. P. Dube

Dr. R. P. Dube, a founder member of the Jabalpur Branch of the I.M.A., breathed his last on the 22nd April 1961, at 10-30 A.M. at his Jabalpur residence, after a protracted illness.

He was born on the 5th March 1896 at Dhuma (Dist. Seoni, Madhya Pradesh) and was educated at the Patwardhan High School, Nagpur, Hislop College, Nagpur. He graduated in Medicine from the Grant Medical College, Bombay in 1922, and joined the Army Medical Service, which he resigned after three years to settle down as a private practitioner in Jabalpur. He was a leading physician of the city till he retired from practice to devote his whole time and energy to various public bodies of the town, the state and the country, with which he was actively associated in various capacities for a number of years.

He was a very active and prominent member of the medical association and was twice elected as the president of the local branch and the vice-president of the M.P. State branch of the I.M.A. Even during his last illness he was actively associated with association activities and was a guiding force in all association matters. It is difficult to enumerate all the public bodies, which were benefited by his devoted services. The following may be mentioned: He was a member of the Rajya Sabha of the Parliament from 1952 to 1960, and was nominated to the National Health Survey and Planning Committee by the Parliament. He was a founder member of the Rotary Club of Jabalpur and was the Rotary Governor for the 53rd District in the year 1950. He led the Rotary Peace Delegation to Pakistan in 1951. He was the Vice-President of the Cantonment Board, Jabalpur for 11 years; a member of the Medical Faculty of Nagpur University for 12 years; a member of the C. P. Medical Council for 6 years; a member of the Academic Council and Court of Nagpur University; a member of the District Medical Board, the President of the M.P. State Football Association till his death; the President of the Jabalpur Boy Scouts Association from 1942 till his death and President of the Bharat Boy Scouts and Guides for the last 12 years. He was a member of the C. P. Medical Examination Board for 6 years, and a member of the Samaj Seva Samiti and Child Welfare Committee, Jabalpur.

In his death not only the medical profession but the city has lost an illustrious citizen, a devoted and talented social worker. A born leader, he was a lovable man, full of wit and humour and energy even at the ripe old age of 65 years. His dynamic personality never failed to win the love and esteem of those who came in contact with him.

YOUR QUESTIONS

Correspondents should give their names and addresses (not necessarily for publication) and include all relevant details for the questions which should be typed. Questions of medical interest will only be accepted for this section. They should be sent in a separate envelope marked "Your Questions". Questions of general interest will be published in preference. Lack of space precludes answering all the questions received.

ED.—*J. Indian M. A.*

Animal Inoculation *vs.* Direct Smear and Culture of Sputum

Q. What is the position of animal inoculation in diagnosis in comparison with direct smear and cultural examination of the sputum?

Ans. The comparison of the three methods, viz., direct smear, culture and animal inoculation can only be relative. In actual practice repeated smears on three occasions from a 24 to 48 hours' collection of sputum is the easiest and the best method. Cultural examination may enable the growth of the organisms in a few cases where smears have been negative. This method, however, takes a long time. Animal inoculation is mainly useful for toxicity tests. Its superiority is offset by the long duration of the experiment and availability of result.

Violet Reaction Given by Pseudomucin with Benedict's Reagent

Q. Recently an emaciated and anaemic lady attended my clinic for dyspnoea associated with massive abdominal enlargement, which was due to pseudomucinous cystadenoma of the ovary of the multilocular type. In order to relieve her of the cardiorespiratory embarrassment, aspiration was done through three places in the anterior abdominal wall. About four pints of thick viscid fluid was aspirated in two sittings and was examined for physical, chemical and cytological characters. The physical and chemical findings are given in Table 1.

TABLE 1—SHOWING PHYSICAL AND CHEMICAL CHARACTERS OF THE VISCID, CYSTIC FLUID REMOVED

Characters	Sample A	Sample B	Sample C
Colour	Clear	Slightly greenish yellow	Clear
Viscosity ...	++	+++	+
Specific gravity ...	1025	1040	1018
pH	8·5	9	8
Effect of boiling ...	Turbidity and solidification of the fluid	As in 'A'	As in 'A'
Effect of boiling with glacial acetic acid	No turbidity No precipitation	As in 'A'	As in 'A'
Effect of boiling with Benedict's reagent	Violet discolouration with some turbidity	As in 'A'	As in 'A'

Pseudomucin is a variety of conjugated protein known as glycoprotein, which is not precipitated by acetic acid. The effect of Benedict's reagent on this glycoprotein was studied, because this reagent, which is a compound containing copper sulphate, sodium citrate, sodium carbonate (anhydrous) in aqueous solution, is usually reduced by glucose, lactose, pentose and homogentisic acid. The peculiar violet discolouration was noted after boiling equal parts of Benedict's reagent and the viscid cystic fluid.

I desire to draw your attention to this chemical reaction, leading to violet discolouration. Is this chemical reaction allied or similar to the Biuret reaction of protein, as the reagents required for Biuret reaction are caustic soda and copper sulphate? Is some glucosamine-like substance present in the glycoprotein responsible for such reaction?

Ans. Of the two suggestions, it is perhaps the reaction of the glucoprotein, the cellular debris and other contaminations which alter the reaction in this way.

SUPPLEMENT
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BRANCH NOTES

ALIGARH BRANCH—A meeting was held on 7-1-61 with Dr. Satnam Singh in chair and it was attended by twelve members. Minutes of the last meeting were read by the secretary and were confirmed by the house. Dr. Satnam Singh gave a talk on common eye disease in general practice. He also showed slides of various diseases, which he discussed. Dr. K. C. Agarwal, Dr. U. C. Gupta, Dr. Mohan Lal and Dr. R. K. Maheshwari and other participated in the discussions. There was special reference to Trachoma and the learned speaker deprecated the tendency, even amongst senior persons in the profession, specially in army to diagnose and treat cases, on the wrong understanding of the disease.

A meeting was held on 25-2-61 with Dr. Satnam Sing in chair and it was attended by about 18 members. Minutes of the last meeting held on 7-1-61 were read and confirmed unanimously.

A talk was given by Dr. S. N. Sharma of State Insurance Hospital, Aligarh on the importance of State Insurance Health Scheme. Dr. Sharma gave all the details of the scheme as it is working in the important industrial centres of India. Dr. Satnam Singh, Dr. Mohan Lal, Dr. M. C. Singhal, Dr. U. C. Gupta, Dr. R. K. Maheshwari and others gave their views on the Socialist Health Insurance Schemes as they are working in England, Scandinavian countries and Russia. The opinion of the house was that in a poor country like ours some form of Socialist Health Insurance Scheme is inevitable, if we want to treat the people.

ALLAHABAD BRANCH—On 17-2-61, a general meeting decided to open a family planning clinic under the general I.M.A. scheme of such clinics with government subsidy.

On 27-2-61, a meeting of the State Working Committee was held followed by a general meeting of the branch. Capt. H. N. Shivapuri, President of I.M.A., addressed the meeting.

On 8-3-61 a scientific meeting was held. Dr. A. B. Roy spoke on Chemotherapy of Cancer. The talk was based on speaker's own work in India and abroad.

On 11-3-61 a scientific meeting was held at Military Hospital. Major S. K. Choudhury spoke on Head Injuries.

On 21-3-61 a scientific meeting was held at the Northern Railway Hospital. Dr. R. Narain spoke on Tumours of the Eye with special reference to Retinoblastoma, Dr. V. S. Srivastava on Tumours of bone, Dr. J. R. Gadeock on a case of Congenital Anomaly.

On 15-4-61, a clinical meeting was held at the Military Hospital. The subject was Diabetes Mellitus.

On 2-4-61 the Spring and Holi Social and Dinner was held. The whole programme was performed by the members and their families and prizes were distributed.

On 7-4-61, the World Health Day was celebrated at Moti Lal Nehru Hospital—the subject for symposium was Accidents and their Prevention.

The following members participated in the symposium.

1. Dr. Pratap Bahadur, Civil Surgeon, spoke on Significance of World Health Day and Topic for 1961, 2. Dr. S. D. Loomba spoke on Accidents in general and their prevention, 3. Dr. R. J. Burke, on Accidents around house and garden and their prevention, 4. Dr. K. L. Atri on Road and Street accidents, 5. Nursing Sisters of M. L. Nehru Hospital on Prevention of Accidents in hospital, 6. Dr. V. N. Srivastava on Accidents in Operating Theatre.

ANAMALLAI BRANCH—A clinical meeting of the branch was held on 17-12-60 at the residence of Dr. R. Perumal, Medical Officer, Sholayar. Nine members were present.

The meeting commenced with the reading of the minutes of the previous meeting, which was adopted unanimously. Letters of interest were read to the members. Concerning the particulars required under 9 and 10 of the proforma required by the D.M.O., it was opined that the association and its members have nothing to do regarding the specific scheme formulated for the 3rd Five Year Plan period for improvement of health conditions in plantations, but it was discussed that the Government might be requested to construct a laboratory at Valparai with the services of a pathologist available and wherein provision might be made to have histopathological, serological and clinical examination done.

Dr. P. Satyanarayana Rao gave a speech on the Congenital Malformation of the Female Genital Organs and Dystocia associated with such conditions.

A clinical meeting was held on 21-1-61 at Dr. Narayan's residence. Nine members were present. Dr. Jayachandran, vice-president, took the chair.

The minutes of the previous meeting was read and confirmed. Dr. Mrs. Diaswalla next gave a talk on Investigations in Sterility which was well appreciated by all.

A clinical meeting was held at Dr. Subbarathinam's residence on 15th February, 1961. Eight members were present.

Dr. Narayanan gave an interesting talk of Pleural Effusion. This was followed by a short discussion in which all members took part. Members discussed in detail about the ensuing Annual Day Celebrations. It was decided to hold the Annual Meeting in the first week of May 1961 on a Saturday. A sub-committee was formed to finalise arrangements for the Annual Day.

A clinical meeting was held at Dr. Jayachandran's residence, on 25-3-61. Ten members were present. Dr. Krishnamurthy, an ex-member of this branch, attended as a guest.

At the commencement of the meeting Dr. Jayachandran, vice-president, who occupied the chair welcomed Dr. Krishnamoorthy, who was a keen and enthusiastic member of the association. Next Dr. K. John gave a talk on Infective Hepatitis.

Next the secretary placed before the members of the sub-committee's Report on the arrangements for the Annual Day meeting. It was unanimously accepted by all.

The members were requested to kindly inform the secretary any incidence of smallpox, cholera and human rabies arising within their purview.

ANDHRA PRADESH STATE BRANCH—The following 2 resolutions were passed at the IV A. P. Medical Conference in addition to the twentytwo resolutions already published (vide pp. 435, May 1, 1961 issue).

23. This Conference requests the Government of Andhra Pradesh that they must give due representation

of the Indian Medical Association at the District and Provincial level in the Governing Bodies of Private Medical Colleges in Andhra Pradesh whether such Governmen Bodies are in existence now or are to be formed in future. Such representatives should be nominated by the respective associations themselves.

24. Resolved to request the Andhra and other Universities to start M.D., and M.S., Degrees in General Practice.

ANDUL BRANCH—The following office bearers for the session 1960-61 duly elected at a General Meeting held on 30-4-61.

President—Dr. B. K. Das, Vice-presidents—Dr. S. Banerjee, Dr. S. K. Roy Palodhi, Hony. Secretary—Dr. B. Mitra, Asst. Secretaries—Dr. N. Sett, Dr. T. Ghosal, Treasurer—Dr. J. K. Ghose, Representative to Provincial Branch—1. Dr. J. K. Ghose, 2. Dr. B. K. Das, Representative to the Central Council—Dr. A. C. Das.

BHOPAL BRANCH—A clinical meeting of the branch was held on 18-4-61 in the Lecture Hall of Gandhi Medical College, Bhopal. Fifty doctors were present. Dr. M. M. Arora presided.

Dr. S. P. Shrivastava, Professor of Surgery, Medical College, Agra, gave an illuminating talk on Problem of Cancer in India. He talked about the aetiology of cancer and various forms of treatment available like surgical use of Radium or Radon, Isotopes and Chemotherapy. He laid special emphasis on the early diagnosis of cancer when it can be cured by surgical treatment for which, according to Dr. Shrivastava, it was essential to educate the public and acquaint the general practitioners with the early symptoms and signs of various forms of cancer for it is they who can help a lot in the early detection of cancer. He suggested that for educating the laymen about cancer and giving them information about it, cancer week, medical exhibition, establishment of cancer detection clnics etc., will be of great help.

DALTONGANJ BRANCH—A District Medical Conference was held on 24-3-61. Refresher course for medical men was held on 25-3-1961 and Dr. Prasad, Dr. Sinha and Dr. Varma of Patna gave talks on Leprosy, Cancer Consciousness and Coronary Diseases respectively, which were much appreciated by the doctors present.

Prizes were distributed on 25-3-61 by Srimati Saran, wife of Sri Saran, Deputy Commissioner, Palamau to the winners of various competitions which were held during the function.

Health week was celebrated from 19-3-61 to 25-3-61. It was inaugurated by the District and Sessions Judge Sri Aikat and the local medicos and the gentries took keen interest in the matter throughout its programme. Besides at Daltonganj, Health Week was also observed by Chandandiha C. D. Block in Latehar Subdivision and at Bisrampur C. D. Block in Sadar subdivision.

The following programme observed during the week, (a) Baby Show, (b) Wrestling, (c) Health examination of school boys, (d) Show of Cinema films, (e) Sports, (f) Public lecture and sanitary drive in the Municipal area.

In a meeting held on 9-4-61, the members condoled the sad and untimely demise of Dr. R. C. Prasad, D.M.O.H., Palamau, and conveyed their sympathies to the bereaved family.

DEORIA BRANCH—A general meeting of the branch was held on 8-5-61 at the residence of Dr. J. B. Khare, Anti-Malarial Officer. A large number of members were present. After the confirmation of the proceedings of the last meeting, the following resolution was moved by Dr. S. C. Acharya and passed unanimously :

With a view to meet the acute shortage of medical and health personnel in the country in general and rural areas in particular, the Deoria branch of the Indian Medical Association, strongly supports the following suggestions, made by Drs. B. C. Roy, Chief Minister of West Bengal and C. S. Patel, President, Medical Council of India, and requests the President, Indian Medical Association, through the U. P. State branch, to meet the Prime Minister in a deputation and impress him with the points, that—

(1) The policy of stiffness in examinations was pursued during the British regime to keep down the percentage of the successful students at a lower ebb. This policy is, undoubtedly, responsible to frustrate the object of increasing the number of doctors in the country. Since the time has changed, fullest facilities for intensive learning should be provided to medical students and their examinations be made easy as in U.S.S.R., whose percentage of successful students is no less than 95 per cent.

(2) The requisite number of specialists may also be available if all the best equipped specialised hospitals are made the basic centres of postgraduate studies, and examining bodies on the line of the Royal College of Surgeons of England are appointed, or different specialists' societies are set up as in U.S.A. to hold periodical examinations of the postgraduate students.

Thereafter Dr. Rajmangal Singh demonstrated a case of purulent type of Dermatitis. Dr. S. P. Agarwal, a neurologist, gave a discourse on Neurology and the role of Electric Current Shock Therapy in neurological cases.

DHARWAR BRANCH—The following is the half-yearly report of the branch.

The annual general body meeting elected Dr. H. V. Upadhye as President, Dr. A. K. Kale as Hony. Secretary, Dr. R. G. Majumdar as Auditor.

Nine new members joined the branch during the current year, making a total of 32 members.

Talks on medical subjects were given by Dr. S. M. Channabasavanna, Dr. H. V. Upadhye, Dr. V. V. Pavate and Dr. A. K. Kale, during the first half of the current year 1960-61.

A condolence meeting was held on 28-10-60 to mourn the sad demise of Dr. M. N. Vaingunkar.

ETAH BRANCH—A clinical meeting of the branch was held on 12-4-61 in Civil Surgeon's Office. Dr. M. P. Banerji presided. All the local members were present. Dr. M. C. Sharma demonstrated three cases of clinical interest. Dr. Agrawal, eye specialist, gave a brief interesting talk on Macular Burn due to recent Solar Eclipse. Besides, other cases of clinical interest were also discussed. Dr. Sohan Lal entertained all the members of the branch to dinner.

FORBESGANJ BRANCH—A general meeting of the branch was held on 26-2-61 at the residence of Dr. D. C. Rakhal at Fulkha with Dr. A. Niranjan in chair. Fifteen members were present.

It was resolved that the Health Week be celebrated at Narpatganj block. The Medical Officer has given consent to it. The previous suggestion of celebrating Health Week of Kursakanta Block be treated cancelled as the M.O. to that block will be out on this date of changed programme. It will be held by the Forbesganj Branch as usual. The Health Week Committee was formed.

A monthly meeting of the branch held on 23-3-61 at the residence of Dr. M. Ahmad at Narpatganj with Dr. A. Niranjan in the chair. The following members were present. Eight members were present.

The proceeding of the last meeting was confirmed.

It was decided that the World Health Day will be celebrated on the 7th April, 1961 at Forbesganj at 4 P.M. A pamphlet may be published explaining the cause and prevention of accident and may be distributed among the public. The next meeting was arranged to be held at Forbesganj at the residence of Dr. M. Jha on 23-4-61 at 5 P.M.

Dr. Mumtaz Ahmad discussed a case of Meningitis. Dr. A. Niranjan talked on anti-fibrosis effect of cortisone. Dr. M. N. Jha discussed a case of 60 per cent burn with cortison and pasma with other supporting treatment. He also explained the treatment of Penicillin reaction with Penicillinase and other histaminics.

JABALPUR BRANCH—A meeting of the branch was held on 22-4-61. The members condoled the sad death of Dr. R. P. Dube, a founder members and an ex-president of the branch and an ex-vice-president of the State Branch.

JAMNAGAR BRANCH—A meeting was held on 9-4-61 at Shri Digvijay Cement Factory at Sikka. Members and their family totalling 67 reached Sikka in the morning by bus. They went round the factory in batches. The D.C.C. gave lunch and the meeting was held at 3 P.M. Some medical problems of the factory were discussed at the meeting.

A dinner meeting was held on 12-4-61. 42 members were present. A deputation of the Rajkot Branch headed by Dr. Dastur was welcomed. Members liberally contributed by becoming Reception Committee members of G. S. & K. Territorial Conference, Rajkot, the total amounting to over 1,000/-.

A meeting was arranged on 21-4-61. Due to lack of quorum it was adjourned. The adjourned meeting took place on 27-4-61. At the meeting a condolence resolution was passed at the sad demise of one of the members Dr. L. R. Mehta.

The following clinical cases were shown at the same meeting: (1) A case of Bronchiectasis by Dr. H. L. Patel. Bronchography was shown. (2) A case of Cancer Tongue was cured by irradiation but the mandible was necrosed. Hemimandibulectomy and staged pedicle skin grafting were done, the final result was demonstrated by Dr. H. L. Patel. (3) The follow up of the following cases were given by Dr. H. L. Patel, (a) Secondary Carcinoma of Liver, presented in meeting IX on 22-3-61, (b) Oedema of Face, presented in meeting IX on 22-3-61.

KALNA BRANCH—The activities of the branch are the following: (1) Number of meetings held—6; clinical discussion was held on hypertension and abdominal pain by Dr. S. C. Mullick and Dr. R. B. Dey Chowdhury. (2) World Health Day was observed on 7th April in every doctor's chamber and necessary advices were given to attending people to prevent avoidable accident and minor ailments etc. (3) Total number of members 15; new members 5. Names of executives for 1960-61, Dr. S. C. Mullick—President; Dr. P. G. Mukherjee—Vice-president; Dr. M. Bose—Hony. Secretary; Dr. L. N. Ghosh—Hony. Joint secretary.

KANPUR BRANCH—Dr. S. K. Sen of Delhi addressed the members on Portal Hypertension and its treatment in a meeting which was very well attended. Interesting discussions followed the lecture.

KARIMNAGAR BRANCH—The monthly clinical meeting of the branch was held on 23-4-61 at the Old Hospital Buildings of the Headquarters Hospital, Karimnagar, with Dr. Harischandra, Superintendent, Nilonfer Hospital in the chair.

A symposium on Poliomyelitis was conducted and the following members participated in the symposium. Dr. Purohit spoke on Pathogenesis and Pathology; Dr. Harischandra on Clinical Features and Differential Diagnosis; Dr. A. K. Dikshit on the Management of the Acute Case; Dr. D. Anajaneyulu on the Surgical Management; Dr. Hakani on Immunisation dealt with different types of immunisation, viz., salk vaccine and Russian oral vaccine and lastly Dr. Miss Kirtanie on the institutional case of the handicapped children. Dr. Harischandra the president, summed up the discussion.

KARNAL BRANCH—The Annual Day of the Branch was celebrated on 5-3-1961. Sixty-five doctors were present. Col. Amir Chand in his inaugural address stressed the need of being scientific minded in the diagnostic approach and treatment of patients. He explained at length as to how the scientific approach and keen interest in the patients changed the diagnosis and cured them.

During the Scientific Session the following lectures were arranged:

1. Dr. B. L. Kapoor gave a talk on Ante and Post Partum Haemorrhages; 2. Dr. J. L. Bhatia, Incharge Tuberculosis Sanatorium, Amritsar, gave a talk on Radiological Diagnosis of Diseases of the Chest; 3. Dr. Chander Prakash, Assistant Professor of Medicine, Rajindera Hospital, Patiala, gave a talk on Chronic Bronchitis; 4. Dr. Kundan Lal, Ludhiana, spoke on Infections of the Ear; 5. Dr. B. B. Joshi, Irwin Hospital, Delhi, gave a talk on Backache. In the evening the following films were screened: 1. A case of Cerebellar Ataxia, 2. Cancer of the Breast, 3. Improved Injection Technique.

A social meeting was held on 19-3-61 at 4 P.M. at the residence of Dr. Harmel Singh, Civil Surgeon, Karnal. Dr. Mrs. Sher Singh, President of I.M.A. Karnal Branch, presided. Twenty-six members were present, some with their wives. A feast of music, songs and tit-bits were arranged.

Dr. Khan Chand Vohra and Dr. Shadi Ram were elected as auditors for the year 1960-61.

A clinical meeting of the branch was held on 2-4-61 in Civil Hospital, Karnal, with Dr. Harmel Singh, Civil Surgeon, Karnal, in the chair. Twenty-four members attended the meeting besides some rural medical officers. Minutes of the last clinical meeting were read and confirmed.

Dr. Harmel Singh gave a talk on Surgical Emergencies and stressed that an emergency should be attended to at once or referred to a hospital where it can be tackled. During the discussion, the speaker and Dr. T. N. Mathur and Dr. Madho Saroop stressed the importance of sensitivity test, and Dr. S. S. Jolly confirmed their views. Specific cases of anaphylaxis resulting in death were reported.

Dr. S. S. Jolly, Assistant Professor of Medicine, Rajindera Hospital, Patiala, gave a discourse on the Diagnosis and Treatment of Ischaemic Heart Disease. He stressed the influence of age, sex, hormones, fats, cholesterol, profession and smoking on the aetiology and causation of I.H.D. He also laid emphasis on the role of Anticoagulant therapy in this disease.

A social meeting of the branch was held on 23-4-61 at the residence of Dr. Amarnath Gupta with Dr. Mrs. Sher Singh in the chair. 24 members were present besides a number of guests and ladies. Minutes of the last social meeting were read and confirmed.

The guests were taken in batches by the host to an Exhibition on A Child's Corner in an Ideal Home arranged by the host. It was really a wonderful collection and very instructive. This was followed by a Talk on Psychological development of a child up to the age of three years by Dr. Amar Nath. He stressed on the parents the importance of proper attention to their words especially up to three years of age during which period the main psychological set up of a child takes place.

KASHMIR BRANCH—A meeting of the branch was held on 7-4-61 at Srinagar Club to celebrate the World Health Day. Dr. Gulam Rassul spoke on accidents and their prevention. The meeting was largely attended by the members.

At a meeting the branch drew the attention of the Kashmir government to the unauthorised sale of medicines, injectables and antibiotics throughout the State and requested the government to stop such sales by imposing the Pharmacy Act more strictly. It also requested to stop issuing medicines, injectables and antibiotics to Vaids and Hakims in the muffasil areas.

The branch also urged that extension of services and re-employment of retired administrative officers should be discontinued. If however there is shortage of doctors, their services should be utilised as doctors and not administrative officers.

The branch requested the government to raise the

emoluments and other conditions of service and make it at par with those in the neighbouring States.

It also suggested that to meet the dearth of properly qualified doctors with post-graduate degrees, the government should immediately take up this training programme and send suitable doctors either abroad or in India for such qualifications. In this way the vacancies of such posts may be filled up.

K. G. F. LOCAL BRANCH—The monthly clinical meeting of the branch was held on 21-4-61. Fourteen members were present. Dr. B. Venugopal presided over the meeting.

Dr. A. Vasantha Kumar presented a case of Haematuria in a boy aged 12 years. Dr. H. A. Nagaraja Rao presented a case of Liver Enlargement with enlargement of Cardiac Shadow in a girl aged 19 years and another case of swelling in the right side of the abdomen in a nine year old girl.

Dr. B. Venugopal presented a case of mass in the abdomen with Jaundice in a elderly male.

KHAMMAMETH BRANCH—The monthly clinical meeting of the branch was held on 9-4-61 at Dr. Y. Radhakrishna Murthi's Clinic.

The President was proposed to the chair and after reading of the minutes of the last meeting which were adopted, the correspondence from the State and the Central offices was communicated to all members.

The President gave an account of the World Health Day observed in the town and thanked all that took part in the observance of the day.

There was a discussion on the outbreak of Cholera recently in the town and the incidence of some cases of Poliomyelitis was also the subject of discussion. The President detailed the various steps that medical men should take under such circumstances.

The secretary requested the speaker of the day Dr. Mohd. Ghouse to give his talk on Some Aspects of Tuberculosis. The speaker dwelt on almost all aspects in detail taking from the history of the disease to the treatment and rehabilitation of cured cases.

A case of Bilateral Radial Nerve Paralysis and one of Unilateral wrist drop of sudden onset were then presented by Dr. Y. Radhakrishna Murthi. Later some lung pictures were shown relating to cystic lung, Empyema secondary to Lung abscess in Apical area and a liver abscess (amoebic) which even after aspitation burst later into the lung and got evacuated by expectoration. Lively discussion took place on all these cases.

Dr. J. B. Simon proposed vote of thanks and the meeting adjourned for dinner. Dr. Sayyed Abdul Majeed was the host.

LUCKNOW BRANCH—The following are the activities of the branch for the first half of 1960-61 :

An emergent meeting of the Executive Committee of the Branch was held on 11-12-60, at the residence of Dr. R. N. Gupta. Dr. K. B. Mathur, Radiologist and Senior Vice-President presided. 12 members were present. A condolence resolution at the sad demise of Dr. R. Lal, former Radiologist, K. G. Medical College, was passed. Four new members were admitted. A letter of Dr. S. S. Misra, Professor and Head of the Department of Medicine, K. G. Medical College, for maintaining a fund by the I.M.A. for helping medical personnel in distress was considered. It was decided to take necessary steps for raising such a fund.

A meeting of the Executive Committee of the Branch was held on 12-2-61 at the residence of the President, Dr. M. M. S. Siddhu. 14 members were present. The question of chalking out the programmes and arrangements for the next U.P. State Conference to be held at Lucknow was considered. It was decided that the present executive committee of the Lucknow branch be turned into an Ad hoc Committee of the Reception Committee of the forthcoming conference and be authorised to take further action in this connection. Three new members were admitted.

A general meeting of the branch was held on Sunday 26-2-61 at Balrampur Hospital, Lucknow. Dr. H. N. Shivapuri, President, I.M.A. gave an interesting talk on his impressions of the last European countries and U.S.S.R. This was a study tour and was led by him under the auspices of I.M.A. The audience felt very much attracted by the observations made by him as shown by the number of queries put to the speaker. Dr. (Miss) S. Paul, Lecturer in Pathology, K. G. Medical College, Lucknow delivered a lecture on the 'Role of Viruses in the Causation of Mystery Diseases in India.' Delegates for the 37th All India Conference were elected.

A general meeting of the branch was held on Sunday 26-3-61 at Balrampur Hospital. Dr. K. B. Mathur, Radiologist, Golaganj, gave an interesting and illustrated talk on Radio Diagnosis of the Diseases of the Gall Bladder. Dr. R. N. Tandon, former Professor and Head of the Department of Tuberculosis, K. G. Medical College, Lucknow and a member of the branch was felicitated on his appointment as Chairman of the Standing and the Technical Committee of the Tuberculosis Association of India for 1960-61 and also as President of the next Tuberculosis Workers Conference.

The World Health Day was celebrated on the 7th of April 1961 in the Lecture Theatre of the Department of Pathology and Bacteriology, King George's Medical College, Lucknow in collaboration with the Directorate of Medical and Health Services, U.P. A symposium on Accidents and their Prevention was organised which was inaugurated by Chowdhury Charan Singh, Minister for Home and Agriculture, U.P. The participants included experts from various fields concerning accidents viz. Dr. K. M. Lal, Director of Medical and Health Services, U.P., Dr. (Miss) Erna Hoch, Psychiatrist of Noor Manzil, Psychiatric Centre, Lucknow, Sri S. C. Misra, Addt. G. Police, Sri M. M. H. Quzilbash, Chief Inspector of Factories, U.P., Sri Ram Krishna, Deputy Development Commissioner, (Agr.), Dr. B. N. Sinha, Prof. and Head of the Department of Orthopaedic Surgery, K. G. Medical College and Dr. M. L. Gujral, Principal, King George's Medical College.

The Seminar was followed by exhibition films dealing with accidents. An exhibition depicting accidents and their prevention was also organised on the occasion. The members lent their full co-operation by attending in large numbers.

MADHYA PRADESH STATE BRANCH—A meeting of the Provincial Council of the State branch was held at Panna on the 23-4-61. Prominent medical men from Jabalpur, Indore and other parts of the province attended.

At the outset, a condolence resolution was passed on the sad and untimely death of Dr. R. P. Dube, a prominent member of Jabalpur branch. New Constitution of the State Branch was also passed after a long discussion. Government was requested not to curtail the casual leave of Government medical officers as they also form part of essential services and do not enjoy the holidays fully and have to attend emergencies at odd hours. It was decided to start Refresher Course for General Practitioners at Jabalpur, Raipur, Indore and Gwalior. Local branches were requested to form defence councils to protect doctors in their respective zones.

MADRAS CITY BRANCH—A meeting of the executive committee was held on 21-1-61 at Hotel Dasaprakash. Eleven members were present.

Messages of inability to attend the meeting from Doctors K. Rama Rao and V. Vijayaraghavan were conveyed. The minutes of the Executive Committee meeting held on 6th December 1960 was read and passed. The members condoled the death of Dr. T. S. Somaskantnan by a suitable resolution, which was conveyed to the bereaved family.

Regarding interpellations in the Central Council Meetings, the Committee was of opinion that the number of questions per member should not be limited but there can be time limit.

The Committee reinstated the following committee members who were absent for the past 3 committee meetings consecutively, Dr. Mrs. Anguli R. Sankaran, U. Sripathi Ram and Dr. Alagasingari Naidu.

The draft of the 25th Annual Report was read by the Secretary. Corrections and suggestions from the members were accepted. The treasurer said she completed the accounts up to June, 1960 and has to complete for three more months. She said she will get it ready before next meeting.

A reception to the new members of the branch was held on 15-2-60 at 6 P.M. at Woodlands Hotel. Dr. B. M. Sundaravadanam exhorted the new members to take lively interest in the association. He stressed the need for a building of its own. He wanted members to take full benefits the association is offering as monthly clinical meetings, journals and social gatherings. Then Dr. D. V. Venkappa former President of the Indian Medical Association addressed and wanted the Indian Medical Association to be the basic organisation under whose banner every specialist organisation should function. Major General S. C. Alagappan wanted the Indian Medical Association to be on very solid foundation and strength so that the Government should take the opinion of Indian Medical Association in all matters regarding medical men and medical education in the country like the B.M.A. in England.

A meeting of the Executive Committee was held on 19-3-61 at Hotel Dasaprakash. 13 members were present. 5 new members were admitted. Minutes of the Committee meeting held on 21-1-61 were read and passed. The date for the Annual General Body meeting was fixed on the 23rd April 1961.

Regarding electing 61 delegates to the XV State Medical Conference to be held at Ootacamund on 1-4-61 Dr. B. Rama Rau proposed and A. M. Sivaraman seconded that all the members of the Madras City Branch of I.M.A. be informed about the conference by post with a request that such of those members who desire to go as delegates should write to the Secretary within 25th March, 1961. If more than 61 members send in their desire to go as delegates, the President and Secretary are requested to select 61 delegates from them. Accepted unanimously.

The expenses to be incurred in connection with the Annual General Body meeting was increased to Rs. 150/- from Rs. 100/- hitherto. Dr. K. V. Swamy was elected unanimously as delegate and Dr. D. R. Varman as alternative delegate to the General Assembly of World Medical Association to be held at Brazil during September 1961.

The circular from State Branch regarding the Family Planning centres was discussed. It was finally agreed that the Madras City Branch would like to have two centres one for South Madras and another for North Madras. A sub-committee consisting of the President, the Secretaries and Dr. Mrs. Sharma was formed to send the proposal. The president Dr. G. Sriramulu was asked to accept the offer of membership of the Health Education Council. The unofficial conversation between the secretary and the Regional Commissioner for Provident Funds regarding the formation of Medical Boards in Madras, Coimbatore and Madurai was communicated to the Committee. The committee felt that the I.M.A., as such should not take part in the formation of such boards even on an advisory role because of the distinction shown between medical graduates and licenciates.

Regarding the increased prices in pharmaceutical products consequent on the recent budget, it was opined that we should lodge an objection by ourselves only. Dr. A. M. Sivaraman wanted to move a resolution in the ensuing State Conference obecting to the reference in the speech by Dr. Prakash C. Bhatia in respect of using of prefix of DOCTOR. He wanted the resolution to be redrafted in view of the Indian Medical Council Act of 1956 (amended) and hence the resolution No. 8 of the Delhi Medical Conference is incorrect.

Dr. Swami wanted that a deputation should be led by the State Branch and wait on Sri D. P. Karmarkar, the Union Minister for Health regarding reorganising medical men as essential in respect of special facilities such as purchase vehicles, food stuff, drugs, intruments, admission of their children into the Medical Colleges, foreign travel, consistency in the matter of pay among medical men serving in Centre as well as State.

A clinical meeting was held on 3-3-61 at the Madras Medical College Common Hall. Dr. G. Sriramulu presided. Dr. Undritz delivered a lecture on Recent Trends on the Treatment of Anaemias. The lecture was supported by slides. Then there was a discussion on the subject in which many members took part.

A meeting of the Executive Committee was held on 16-4-61 at 7-45 P.M. at Hotel Dasaprakash. 10 members were present. The committee scrutinised the audited statement of accounts and accepted. The nominations for the post of president and two vice-presidents were gone through.

The following resolutions to be moved at the General Body meeting on 23-4-61 were read and accepted :

1. It is the feeling of the members of the Madras City Branch of the I.M.A. that the charges levied for Bio-Chemical, Bacteriological and Pathological investigations at Government Institutions are exorbitantly high and a reduction by 80 to 90 per cent., is called for. This house, therefore, resolves to request the Government to suitably modify the charges.

2. This house resolves to invite the All India Medical Conference in the year 1962 to Madras.

3. This house resolves to buy a visual apparatus to be used by the Association. The secretary is empowered to purchase the apparatus at the earliest.

A special meeting of the Executive Committee was held on 16-4-61 at 8-30 P.M. The following new members were admitted : (1) Dr. M. Alexander, (2) Dr. (Mrs.) M. Purushotham and (3) Dr. S. V. Joseph.

A meeting was held on 17-12-60 at the Madras Medical College Common Hall with Dr. G. Sriramulu in the chair.

Doctors S. Balasundaram and A. J. Mehta who went to Europe as members of I.M.A. Study Tour team gave their impressions of the tour. The speakers answered a few questions from members. Later the following films viz., (1) The Grieseofulvin Story and (2) A Vitamin Emerges, were screened.

MADURA BRANCH—A monthly meeting of the branch was held on 11-3-61, under the presidentship of Dr. K. G. Ramabadran, Madurai. The Secretary read the 33rd Annual Conference minutes. Dr. O. Francis, Obstetrician and Gynaecologist, Erskine Hospital, Madurai, gave an interesting lecture on Obstetrics Then and Now. The Secretary proposing a vote of thanks the meeting terminated.

The general body meeting of the branch was held on 15-4-61. Dr. Abdul Sathar, Madurai, presided. The secretary read the previous monthly meeting minutes. The following resolutions were moved by Dr. R. Parthasarathy Naidu, Kannivadi, and passed unanimously.

1. This general body meeting of the Madura Medical Association resolves to protest against the discriminating distinction shown by the Government in fixing the scale of pay of the Local Boards Licenciates of modern medicine and requests to sanction the States scale of pay of Rs. 250/- from June 1960, the date of commencing into force of the new revised scale of pay.

2. This meeting of the general body of the Madura Medical Association resolves to request the Government to sanction the Central Government pay and the Dearness Allowance to the medical officers of the State and the Local Board.

3. This meeting of the general body of the Madura Medical Association resolves to request the Government to enhance the age of retirement of Medical Officers of both the State and the Local Boards to sixty with option

to retire at the age of fifty-five or thirty years of service whichever is earlier.

4. This meeting of the general body of the Madura Medical Association resolves to request the Government to provincialise the remaining Local Board Hospitals and Dispensaries at an early date in view of the fact that the disparity in the pay structure has been done away with once for all.

5. This meeting of the general body of the Madura Medical Association resolves to request the government to sanction the subsidy of Rs. 250/- per month for the rural medical practitioners.

6. This meeting of the general body of the Madura Medical Association resolves to request the government to constitute staff councils on the analogy of the Central Government and the Whitely Councils of the United Kingdom.

7. This meeting of the general body resolves to request the government and the University Grants Commission to start the proposed university at Madurai.

8. This general body meeting resolves to request the government to start an Agricultural and a Veterinary College at Madurai as early as possible at least within end of the 3rd Five Year Plan period.

The following resolutions were moved by Dr. N. Suriyanarayanan, Madura and passed unanimously.

1. This meeting regrets to find in the draft third five year plan, the suggestion of the Planning Commission to revive the Licentiate Course in Medicine, to meet the apparent shortage of medical men especially in villages. This meeting strongly opposes this recommendation of the Planning Commission, since this retrograde step will have a devastating effect on the solidarity of the profession. This meeting resolves to request the Central I.M.A. to take up the matter.

2. This meeting suggests to the Government to meet the shortage of medical men to run the hospitals in the rural areas. This meeting suggests to the government, to post experienced medical officers, to the rural areas with an enhanced salary and suitable living quarters.

3. This meeting resolves to request the Central Government that the Indian Medical Council Act should be further amended as follows. There should be only one schedule for all statutorily qualified medical men with an All India Medical Register containing the names arranged in the alphabetical order. The following resolution was moved by Dr. K. A. Ramalingam, Madurai. It is resolved that Madura Medical Association should conduct the Annual Table Tennis Tournament for its members as before so that the Association will foster fellowship among members—in yet another way—as laid down by the Association aims in paragraph I of I.M.A. The table was donated by a well-known philanthropist for the expressed purpose of catering recreation to members.

Dr. G. Subramanian, Reader in Medicine, Madurai Medical College, Physician, Government Erskine Hospital, Madurai gave a lecture on Early Diagnosis of Heart Disease.

MEERUT BRANCH—A general meeting of the branch was held on 27-12-60 at 4-30 P.M. in the premises of Dr. Bhupal Singh Medical Memorial, Meerut. Twentysix members in addition to 2 guests were present.

Proceedings of the last annual general meeting held on 19-11-60 were confirmed. A resolution for speedy recovery of the President of the branch, Dr. R. Mital who has gone to Aligarh for his eye operation was unanimously adopted.

Dr. M. Prakash introduced the learned speaker of the evening Dr. N. P. Benawri, Professor and Head of the Department of Physiology and Bio-Chemistry, G. R. Medical College, Gwalior to the house.

Dr. N. P. Benwari gave his talk on 'Diet and Gout'.

As an introduction to the subject the learned speaker first of all dealt with the comparative metabolism of Uric Acid in lower animals and compared the process in man. Then by his personal research experiments showed the effects of various food stuffs' excretion of Uric Acid in man. He noted that rice was the most incriminating diet.

MONGHYR BRANCH—On 16-2-61, an ordinary meeting was held at Jamalpore under the presidentship of Dr. K. P. Mitra. Members decided to have a family clinic to be run by the branch located at Parsande Hospital. Also a decision was taken to hold a district medical conference during the Health Week. A paper was read on Haematuria.

On 22-3-61, the District Medical Conference was held along with the meeting of the branch under the presidentship of Dr. K. P. Mitra. Refresher course lectures were delivered by Dr. J. N. Rohatgi on Squint and Common Causes of Blindness and by Dr. B. Dhar on Chronic Respiratory Infections. The meeting was followed by a dinner arranged by the host Dr. S. Banerjee.

MORADABAD BRANCH—A Regional Medical Conference was held at Moradabad on 5-3-61. The venue of the conference was the Northern Railway Senior Institute, situated in the Railway Colony in pleasant surroundings. More than one hundred doctors from Bareilly, Badaun, Rampur, Bijnor, Lucknow, Agra, Kanpur, Chandausi, Amroha, Sambhal, Kashiput, Ram Nagar and Bilari, attended the Conference. The Conference started at 10-45 under the presidentship of Dr. Hansraj. Dr. J. S. Agarwal Chairman of the Reception Committee accorded a hearty welcome to the guests and delegates. Dr. Hansraj, the president addressing the conference stressed on the need for the elaboration of health programme which utilises as fully as possible all resources of modern science in the diagnosis, treatment and prevention of diseases and for the promotion of positive health. Let no politics enter in the sacred temple of medical profession whose only politics is Service of the Suffering Humanity.

Professor P. N. Wahi, Principal, Agra Medical College inaugurated the conference and his talk was devoted to Medical Education for general medical practices. He said that the Medical Education programme in India has made tremendous strides since 1947 with sixty two Medical Colleges producing doctors to meet the health needs of the country. But one feels that with changing concept of patient care demands and emphasis on positive health, the reorientation of the curriculum has not kept space. The discontent with the present system of Health Education is not only in India but all over the world. The cause of the discontent could probably be that in the training of our doctors, we have been following an educational policy whose purpose has never been clearly defined, understood and universally accepted by the educators, the students and the public. The time has arrived when education for general practice should be recognised as a definite entity. It would be a legitimate demand to suggest that medical curriculum should be adopted to provide the training necessary for General Practice. Organisation of college of General Practitioners on the lines of U.K. should be considered.

Dr. V. P. Rastogi, Organising Secretary read out messages from Mr. C. B. Gupta, Chief Minister, U.P., Sri D. P. Karmarkar, Minister for Health (India) and Dr. C. B. Singh, Principal, Medical College, Kanpur and others wishing the conference a success.

Dr. J. R. Luke was in-charge of the scientific session which started from 11-30 A.M. and continued till 4-30 P.M. with a break for lunch. The morning session were presided over by Professor S. P. Srivastava and Professor R. J. Garst. The speakers were Professor R. J. Garst

on Rapid Treatment of T.B. Spine; Dr. R. N. Katariya, Delhi, on Inguino Scrotal swellings; Professor S. P. Srivastava, Agra spoke on Acute Abdomen, Dr. O. P. Jeshwal spoke on Acute Abdomen in Infancy and Childhood. The afternoon session were presided over by Dr. M. L. Sharma and Professor K. S. Mathur of Agra, Professor K. S. Mathur spoke on Diagnosis and Treatment of Plural Effusion. Dr. M. L. Sharma spoke on Coma and Dr. B. N. Bhalla of Kanpur spoke on Diabetic Coma.

A cultural programme was arranged at 6 P.M. in the hall, which was highly enjoyed by all.

A meeting was held on 7-4-1961 to observe World Health Day, in co-operation with the Municipal Health Officer, Moradabad. Dr. V. P. Rastogi spoke on accidents in the eye and their prevention. Dr. J. S. Agarwal, Dr. J. R. Luke, Dr. Nazman Singh, Sri B. S. Sarama, District Information Officer also spoke on this occasion. Sri L. N. Acharya suggested the setting up of an organisation to look after prevention of accidents. The meeting was largely attended by the public, the students and the members of the profession. Suitable posters were also exhibited at the meeting.

NAGAPATLINAM BRANCH—A condolence meeting was held under the presidentship of Dr. A. Thiagarajan, Retired D.M.O., on the death of Dr. V. D. Rajan on 3-4-61.

All the members expressed their deep regret for the untimely death of Dr. V. D. Rajan who died of coronary thrombosis on the afternoon of 18-3-61. He was about 58 years old when he died. He was very kind to the poor and spent most part of his wealth for them. A suitable resolution was passed.

NAIHATI BRANCH—Under the auspices of the branch, Rabindra Nath's Birth Centenary Festival was celebrated on 6-5-61 at Naihati Municipal Town Hall. Dr. P. K. Bose, president of the branch took the chair and Sri Bibuti Bhusan Bhattacharya, Headmaster, Bhatpara Higher Secondary School, was the chief guest.

A variety programme, which included music, dance, recitation, satire, drama ("Rogir Bandhu"), etc. based on poet's immortal writings took place. The function was largely attended by the members of the association and the dignitaries of the vicinity. This type of socio-medical function, practically a bold venture of this branch, was highly appreciated by all and Dr. B. N. Sadhukhan, secretary of the branch, received all members and guests and stressed about the importance of this type of performance, a totally new approach by the doctors.

NALGONDA BRANCH—A clinical meeting was held on 9-4-1961, at Nalgonda. Dr. D. Tulsi Das presided. Sixteen members were present. A symposium was held on Poliomyelitis. Dr. D. A. Mohan Rao demonstrated three cases of Poliomyelitis clinically diagnosed in children of two years. Dr. M. C. Narasimhulu discussed differential diagnosis of Polio.

NAWADA BRANCH—World Health Day was observed on 7-4-61 at the Subdivisional Hospital. A public meeting was held on 7-4-61 at 5 P.M. in the Subdivisional Hospital for the purpose. Sri D. C. Chatterji, second officer, Nawada Subdivision was in the chair.

Dr. J. N. Kaviraj, Hony. Secretary, Dr. K. D. Sur, Dr. J. M. M. Tudu and Dr. S. K. Pathak, all spoke on the various aspects of accidents and their prevention. The meeting closed with the presidential address and vote of thanks to the chair.

NELLORE BRANCH—An ordinary meeting of the Association was held on 13-5-61 at 7 P.M. at the Co-operative Central Bank Ltd., Nellore. Dr. K. V. Thiruvengadam, Professor of Clinical Medicine, Stanley Medical College, and Physician, Stanley Hospital, Madras, gave a lecture on Amoebiasis. The lecture was very educative and the meeting was well attended.

NIZAMABAD BRANCH—A clinical meeting of the branch was held on 14-5-61 at Nizamsager. Dr. Razzack told about Nephritis Type I in children and about his observation in 53 cases with statistics. Dr. Gulam Nabi demonstrated following cases: 1. Female aged 40 years with a lump on laparotomy found to be T. B. abdomen—improving satisfactorily; 2. Female 50 years with a mass in abdomen—laparotomy revealed ascitic type of T. B. abdomen—improving satisfactorily; 3. Female 18 years ruptured ectopic with secondary infection operated successfully.

Dr. K. A. Rao presented a case with x-ray of manhandling of simple fracture of neck femur by quacks which became untreatable now.

Dr. Laxminarayan presented x-ray of a case of Sarcoma of the lower end of femur in a girl aged 18 years.

PUDUKKOTTAI BRANCH—An Inter District Medical Conference of the branches of Trichy, Tanjore, Madurai, Chettinad and Pudukottai was held on 8-4-61, in connection with the Centenary Celebrations of the Town General Hospital and Diamond Jubilee Celebration of the Ranee's Hospital, Pudukkottai, in specially erected Pandal of the Town General Hospital.

Dr. L. Sylvester, District Officer, Trichy, presided. Dr. R. Subramaniam, Professor of Medicine, Madras Medical College, Madras, delivered a lecture on Recent Advances in the Drug Treatment of Hypertension. He discussed about the latest drugs and after this a lively discussion took place in which several members took part. After this lecture the members went to the Town Hall for the next lecture when Dr. C. S. Sadasivam, Professor of Thoracic Surgery, Madras Medical College, Madras, gave a lecture on Malignant conditions of Oesophagus and illustrated with Epidiascopic Projections of X-ray films and slides. Then Dr. K. A. Krishnamoorthy, Paediatrician, Madura Erskine Hospital, Madurai, gave an interesting lecture on Nephrotic Syndrome in Children, and the use of Corticosteroids in the treatment of this condition.

The members were later entertained to the vocal music by S. Vijaylakshmi and party.

SHILLONG BRANCH—The following is the report of activities of the branch during the past half of 1960-61 (1st October 1960 to 31st March 1961).

On 27th October 1960 a clinical meeting was held at Welsh Mission Hospital, Dr. P. A. Shave presented the following cases: (a) A case of Ectopia Vesicae, (b) A case of local Gigantism, (c) A case of Osteogenic Sarcoma. Dr. R. A. Hughes presented the following cases: (a) A case of Mycetoma spreading via lymphatics responding ultimately to Iodides, (b) A case of Carcinoma Oesophages treated palliatively by the insertion of a wide bore polythene tube.

On 27th December, 1960 a general meeting was held in which the following resolutions were passed: (a) Condolence for the sudden demise of Dr. U. C. Bardalai, (b) A resolution taken protesting the decision of the Central Council, I.M.A., regarding change of venue of the All India Medical Conference.

On 4th February 1961 a combined clinical and general meeting was held in the Pasteur Institute, where Dr. (Miss) N. Chaliha gave a talk on Menorrhagia. Dr. (Miss) K. Joshi demonstrated with an elaborate case note a case of Cirrhosis of Liver. Dr. (Miss) J. Tariang presented with notes a case of Nephritis with Splenic Anaemia. Both cases showed some rare and unusual features.

Candidature for post of President and Vice-Presidents of the State I.M.A., were considered.

Central Council member and State Council members were elected.

Government Contributory Health Scheme was discussed and a sub-committee was formed to get details of it.

SHIMOGA BRANCH—In November 1960 the monthly clinical meeting was held at Chennagiri. A visit to Madal Tunnel was arranged. Dr. S. Sreenivasan, District Surgeon, Shimoga was in the chair. Dr. Metgud of Belgaum addressed on Surgery in General Practice. Dr. Mrs. Metgud addressed on Leucorrhoea.

In December 1960 the meeting was held at McGann Hospital, Shimoga, Dr. D. Krishnamurthy was in chair. Dr. B. N. Krishnamurthy, Chief Medical Officer, K. G. F. Mining Hospital, addressed on Dextrocardia. Dr. Venugopal addressed on Interesting Radiograms on Bone Diseases.

In January 1961 the meeting was held at McGann Hospital, Shimoga. Dr. S. Sreenivasan was in the chair. Dr. Vinayak Kirpekar of Sholapur addressed on Acute Abdomen.

In February 1961 the meeting was held at Thirthahalli. A visit to Agumbe was arranged. Dr. A. D. Paul was in the chair. Dr. P. A. Venkata Rao of Mangalore addressed on Surgery of Prostate.

In March 1961 a meeting was held at Hullathi. Public lecture in Kannada was delivered by Dr. S. V. Rama Rao of Hubli on Nutrition and Food Habits in the village.

The clinical meeting was held under the chairmanship of Dr. Bucshall, Virus Research Laboratory, W.H.O. Dr. S. V. Rama Rao of Hubli addressed on Concept of Comprehensive Medicine and its Importance to the General Practitioner. Dr. M. C. Chinnapullay of Hubli addressed on Managements of Hepatic Coma.

In April the clinical meeting was held at Badigund Mines, 12 miles from Bhadravati.

A public lecture in Kannada was delivered by Dr. Sreedhara Upadyaya of Shimoga on Infectious Diseases—Their Spread and Prevention and Dr. V. N. Krishnamurthy addressed on Healthy Habits and our Culture.

The clinical meeting was held under the chairmanship of Dr. R. Lakshmana Rao. Dr. B. S. Jirige of Belgaum addressed on Surgical Emergencies in the New Born.

Dr. V. N. Krishnamurthy of Belgaum addressed on Recent Trends on Immunological Reaction. Dr. B. V. Rama Rao, E.N.T. Specialist, Belgaum spoke on Diphtheria.

TIRUCHY BRANCH—A monthly meeting of the branch was held on 25-3-61 at the Medical Association premises, Tiruchy. As the President was absent the Vice-President Dr. T. V. Ranganathan took the chair. About 50 members including the guests from Pudukottai branch and Salem branch were present.

The President introduced Dr. K. V. Thiruvengadam, Professor of Clinical Medicine, Stanley Medical College and Physician, Government Stanley Hospital, Madras to the members and requested him to give his talk on Common Chronic Pulmonary Diseases. The lecturer gave an excellent talk on the subject and also demonstrated some slides on the subject.

A film on The Griseofulvin Story was shown to the members.

UTTAR PRADESH STATE BRANCH—The U.P. State Branch records with thanks the generous contribution of Dr. Bagley of Saharanpur for Rs. 1,000/- only towards the Central Building Fund.

The fourth and an emergent meeting of the year 1960-61 of the Working Committee of the State Branch Council was held on 23-4-61 at the residence of Dr. Navin Chandra, Swarup Nagar, Kanpur. Fifteen members were present.

Dr. B. N. Bhalla, President, occupied the chair.

The meeting at the outset placed on record its deep sense of sorrow at the sad demise of Dr. R. B. Mathur of Kanpur and conveyed its heartfelt sympathy to the members of the bereaved family.

The proceedings of the last meeting were confirmed.

The Committee considered the Central Circular No. 29/60-61 dated March 29, 1961 regarding the proposal to bring doctors' dispensaries under the provisions of the Drugs Rules in respect of accommodation, clealiness, etc. and was of opinion that the dispensaries run by doctors for the use of their own patients only should not be brought under control of Drugs Rules.

The Committee considered the Central Circular No. 32/60-61 dated April 4, 1961 regarding Employees State Insurance Act 1948 and authorised Dr. Navin Chandra and Dr. S. N. Saxena to draft suggestions for amendments in the act in consultation with the Kanpur Branch where the scheme is functioning. The State Branch Secretary was authorised to forward the same to the Central Office.

Regarding Aligarh Conference resolution on leave rules it was decided to reiterate the resolution and to persue the matter with the Government.

The letter of the Hony. Secretary, Faizabad Branch was referred to the Central Office of the I.M.A. for necessary action.

The Committee considered the letter of the Hony. Secretary, Allahabad Branch regarding the objection raised by the Principal, Government Junior Technical School, Allahabad to the certificate issued by Dr. A. Mukerjee to one of his patients and decided to protest and write to the Government on the subject.

The Hony. Secretary put up the report of Dr. K. M. Lal on Medical Development in the State during the 2nd Five Year Plan.

The Committee approved the suggestion of the Hony. Secretary to incorporate it in the Souvenir to be issued by the Lucknow Branch in connection with the next State Medical Conference to be held in Lucknow.

Regarding the Allahabad Branch resolution regarding the recent levy of 10 per cent excise duty on Patent and Proprietary Medicines by the Central Government, the Committee was of the opinion that the general enhancement of Excise duty is unjustified and unwarranted as it makes the medicines dearer for the patients and decided to approach the Central Office of the I.M.A. to take up the matter with the Ministry of Health, Government of India.

VISAKHAPATNAM BRANCH—Under the auspices of the Vishakhapatnam District Branch a symposium on Poliomyelitis was held at King George Hospital on 5th April 1961 with Dr. V. S. Raghunathan in the Chair.

The following doctors took part in the symposium: (1) Dr. S. Dakshinamurthy, Professor of Preventive and Social Medicine, dealt with the preventive aspects of the disease, (2) Dr. K. V. Subbarao, Professor of Bacteriology dealt with the bacteriological aspects of the disease, (3) Dr. Bhaskarareddy, Professor of Pathology dealt with the pathological aspects of Polio, (4) Dr. (Mrs.) Lovanya Mukherjee, Professor of Paediatrics dealt with diagnosis, symptoms and treatment of the disease, (5) Dr. C. Vyagreswarudu, Professor of Orthopaedics, dealt with orthopaedic complications of the disease.

Dr. N. Govindarajulu, District Medical Officer, suggested the steps to be taken to prevent the disease.

An interesting discussion followed and all the professors were of the opinion that an active immunisation of all children by Polio Vaccine is essential at a very early date.

In a general body meeting held on 12-5-61, under the auspices of the Indian Medical Association and Academy of Medical Sciences, Dr. Gharpure, Director of Virus Research Laboratory addressed a large gathering of doctors on Poliomyelitis. Dr. D. Govindareddy introduced the speaker to the audience and said that Dr. Gharpure has dedicated his life full of vast experience to the cause of research and pathology. Then Dr. Gharpure in his lecture on Polio dealt at length with the method of administration of Sabin's oral vaccine to children between the age group of 2 months to 5 years.

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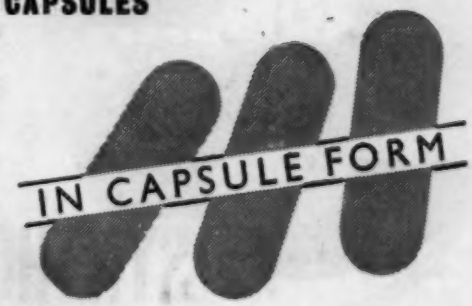

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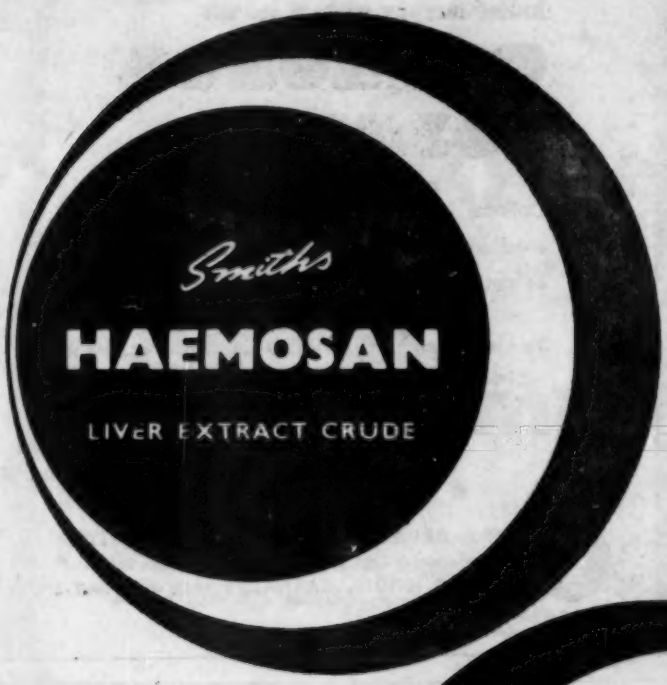

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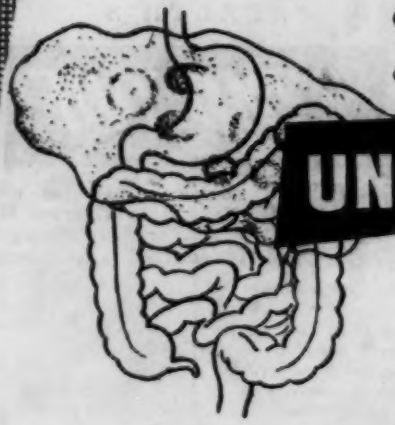

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